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Authentic Learning Environments: Designing a new standard for public education

Stephanie Griffith

Stephanie J. Griffith
Kennesaw State University

AUTHENTIC LEARNING ENVIRONMENTS

DESIGNING A NEW STANDARD FOR PUBLIC EDUCATION

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Request for Approval of Project Book

Stephanie Griffith

Authentic Learning Environments

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Thank you to my supportive family for understanding the many sleepless nights. Thank you to my friends and classmates for their perspectives and fresh ideas that made me question the research I was going in a good way.
Lastly thank you Aden, my ever present son. You opened my eyes to the basic questions that we should be asking all the time to everyone.

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ABSTRACT

The intention of this thesis is to explore the architectural problems of public primary school learning environments and propose possible solutions. This thesis draws from various public blog and public web article accounts and experiences of those working in or studying the institutions of primary education and the problems they are struggling to address. The architectural focus brings to light that while most educators argue that teaching can happen anywhere, this body of research will propose an optimal learning environment in which a set of ideal values are defined as authentic learning and is used to encourage and support a creative learning environment.

01 THEOREM

INTIMIDATING SCHOOL
-DIGITAL MEDIUM

1.1 THESIS STATEMENT

As a parent of a six year old I naturally did some research into the public schools in my area. The discovery of the high percentage of failing school came as a bit of a shock. Parenting blogs and teacher run support websites turned up outrage and calls for help. Parents should not have to dig holes to find alternatives for a basic public education system. Our public education standards should be better because it says a lot about our values as a society.

Most school buildings of today were modelled after plans and ideals designed over a hundred years ago. The social conditions have changed as well as the economic climates that determined many building choices. Those designs are not questioned as to whether they still support our new ideals as a society. A hundred years ago schools conditioned students to be compliant and accept authority. Today teachers have shifted their attention to support authentic learning as a way of developing creative and critical thinking skills.

My proposal then is to re-design the learning environments in primary public school to encourage and support student engagement in an authentic learning experience.

1.2 FAILING SCHOOLS

The traditional school design is now being tasked with developing future citizens who will be able to think both creatively and critically.

However, these spaces where children are learning are creating negative psychological impacts on their moods, their ability to focus and retain information. The traditional design of classrooms often make it easy for students to lose focus because the spaces offer very little to stimulate their sense of curiosity.

Students are told to sit down listen, and repeat answers that have been feed to them for hours in a day. Lost in this routine for years, students coast through school barely aware of their surroundings and what they are supposed to be learning.

Figures 1-1 thru **1-4** express a personal experience of classroom conditions.

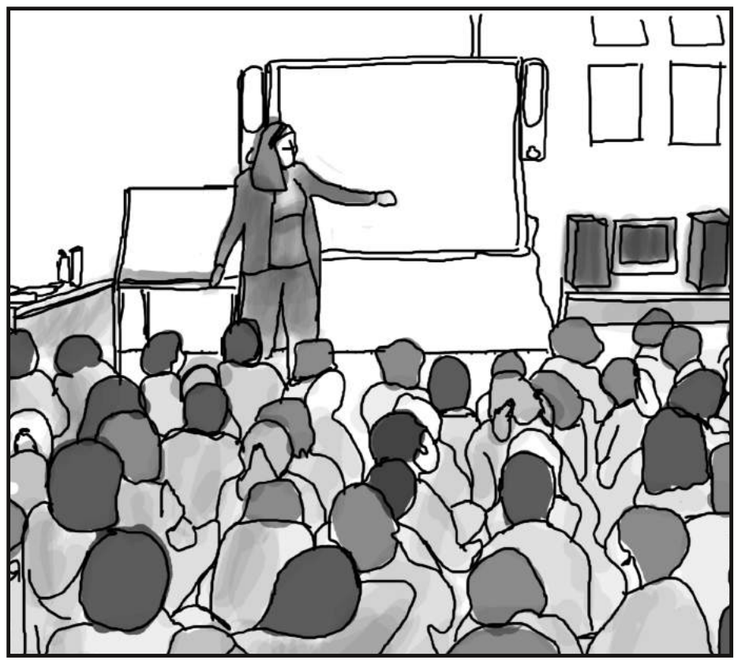


fig. 1-1 CROWDED CLASSROOMS

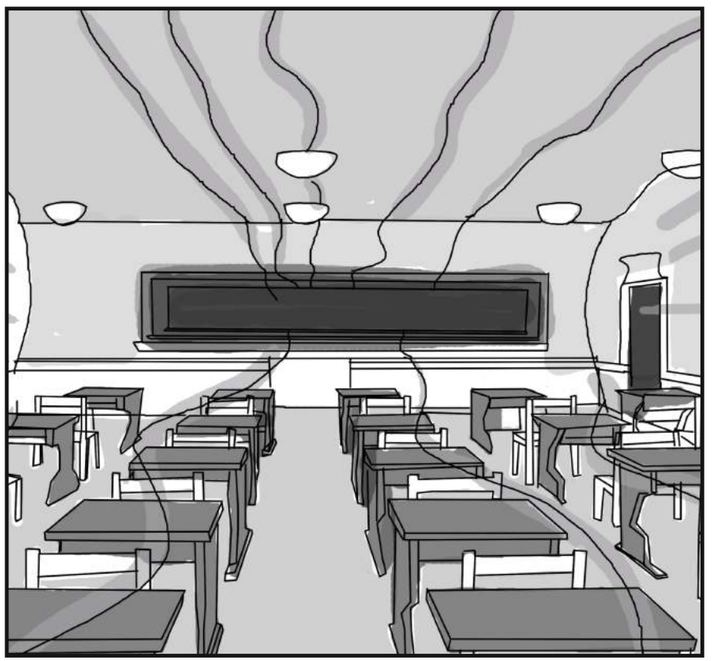


fig. 1-2 CHALK BOARD TOO FAR AWAY

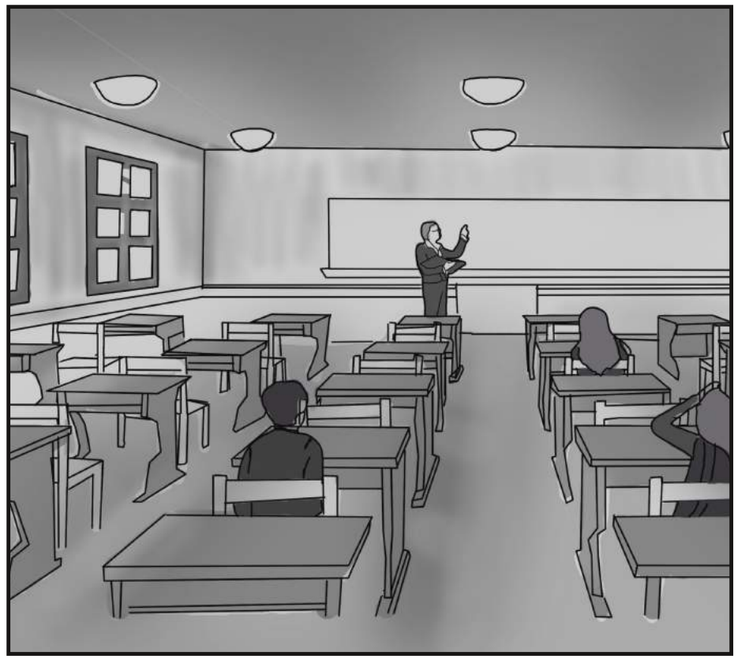


fig. 1-3 CLASSROOM IS SO DARK

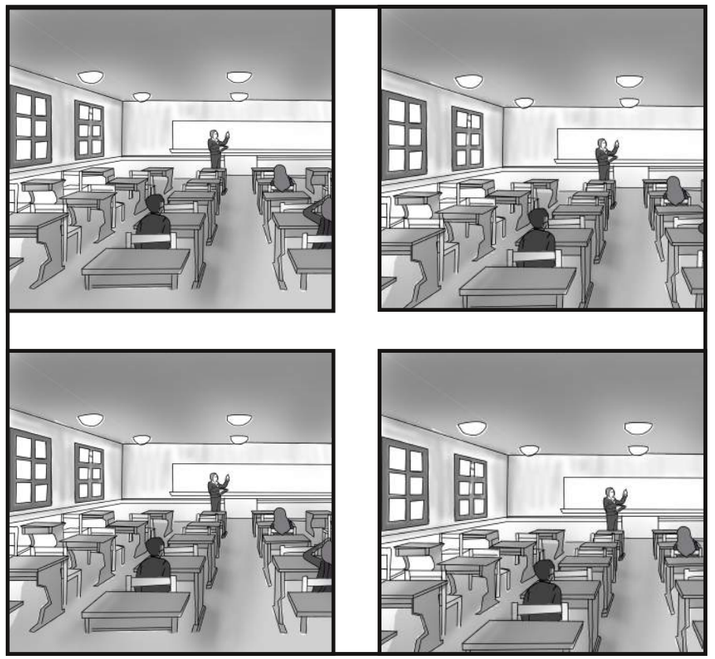


fig. 1-4 MATH, ENHLISH, HISTROY, SCIENCE ALL LOOK THE SAME

The bases of a failing school boils down to a schools high percentage of students that are failing to meet required test levels. There is a disconnect that happens between the classroom lessons and the test scores. Standardized tests became a measure of progress so as to catch failing students early enough to provide help. While the first step of detection works well enough the second step of identifying the core problem is much harder to label. This disconnect is where the teachers and students are struggling with curriculum and teaching methods. The comic in **figure 1-5** makes light of the struggle between the students and the teachers with seeing eye to eye on how to learn.

This struggle translates as a school wide problem that suggests somewhere in the process the education received is not up to basic standards. It was only recently that schools would be closed for a failing status. This is due to parents moving their children to another school resulting in adding more factors and complications to the students unidentified problems.

The cycle starts from the failing test scores then to parents researching options in order to help their children, then to a school population dropping and with that resources and financial support following suit, to eventually failing test scores again.
(Chen, Grace; The Myth of Public School Failure; Ravitch, Diane; Rizga, Kristina)

The Failing School System

A good mind is a terrible thing to waste on high school.

fig. 1-5 (https://medium.com/@Thinkmafia/the-failing-school-system-637e9b58a7c7)

1.3 CONTRIBUTING FACTORS

The education system gives measurable read outs for when something is failing. Although it is difficult to identify a students specific problem there are some common contributing factors. These factors are divided into two categories. First is the social attitudes toward education. Scenes from the movie Captain Underpants draws from the common preconception of the students experience of school in **figure 1-6**. Second is the impact and effect that the designed environment has on the learning experience.

The social attitude consists of the curriculum and teaching methods used. The teacher's perspective of the curriculum breaks down to a set of monthly goals, test outlines, and grade output. At each point in the curriculum teachers are asked to give recorded proof that their students are following the guide lines. The student's perspective of the curriculum is fragmented at the best of times. **Figure 1-7** illustrates the student's perspective of how a day is divided by what they can remember. This is due to the amount of information the teacher feels a student needs to have available about the yearly plans. Much of the plans are still in progress during the school year to adjust to the students progress as needed. Alternatively, the students work with a daily schedule.

Typically an elementary school student's day is about 6 to 7 hours long. The day is portioned out into subject blocks which last between 30 minutes to 1 hour. For elementary school there are 3 core subject 1 forty-five minute lunch break and lastly an average of 2 special classes. The 3 core subjects are math, reading and writing.

The 2 special classes are either determined the teachers, the students, or the administrators. Typically these classes are gym, music, art, science, history, language, or computer technologies. schools and teachers with more options allow for the students to pick their special classes.

The problems at this stage relates to the pacing and expectations of learning the material. At this stage teachers are realizing the differences between learning and schooling or education. Schooling or education is refereed to as an imparting of knowledge that can be measured by standardized benchmarks of demonstrations. Learning, on the other hand, is refereed to as an informal gain of knowledge through experience. Using theses definitions a schools curriculum could only support education not informal learning. As such, teachers are starting to develop various teaching methods as a way of incorporating real life projects to encourage authentic learning in a formal setting.
(Common Teaching Styles in Elementary School; Elementary Teaching Methods)

fig. 1-6 (http://smillingcartoonist.tumblr.com/post/165192223784/captain-underpants-the-first-epic-movie-2017)

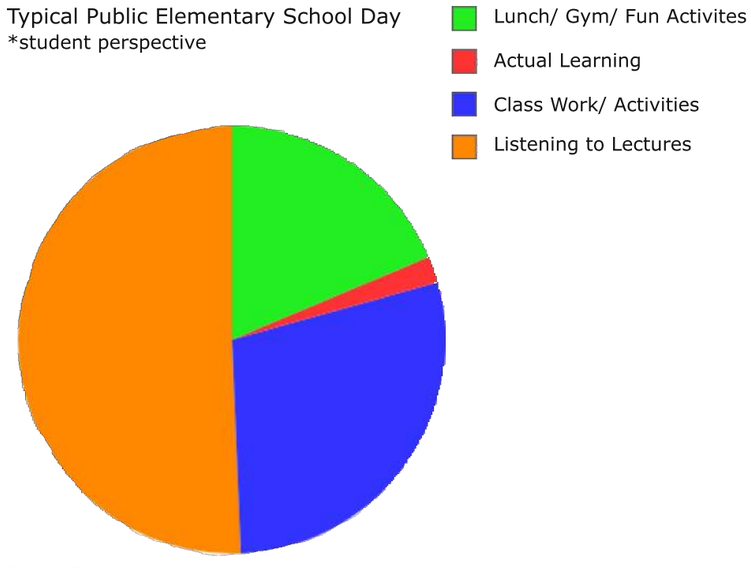


fig. 1-7

However, these social factors falls out of the role of the architect but they are important because they set up design strategies based on how students move through the building and the amount of space needed for an activity.

Historically, classrooms and school houses were considered a central part of a community. Children used the building during the day while adults were working. In the evening that same building would house town hall meetings and other such events. Of course the bigger the community the bigger the school building. Much of the school buildings in America borrows from existing plans of the buildings in the communities. In smaller towns the school buildings were modelled after a one room house. In larger towns school building were modelled after small factories. It was not until after the great depression in the 1930s that a common school design was developed along with the first form of a standard curriculum **(Figure 1-8)**.

At the time this public school design was developed it was very innovative. The design goals were to support discipline, basic literacy skills and more often than not basic job skills.
The classroom used its rectangular shape to establish a front and back which created a direction for students attention. The doors and windows were designed next after the exterior walls were determined. Lastly was the arrangement of the desks.

This layout over the recent years came under scrutiny because the building are old and are difficult to modify to accommodate modern technologies and computer devices. These inquires however foreshadow the much larger problem that the current design of public schools supports a teaching method that conditions compliance to authority not a teaching method based on authentic learning which develops a students critical and creative thinking skills **(Figure 1-9)**.
(Baker, Lindsey)

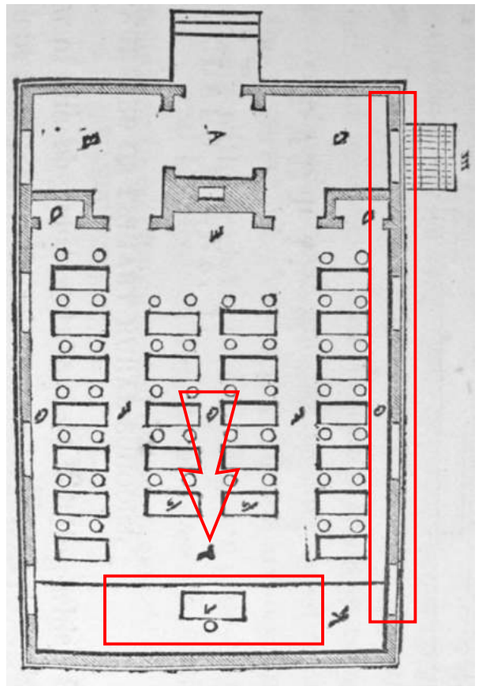


fig. 1-8 "COMMON SCHOOL" FLOOR PLAN
(Baker, Lindsey)

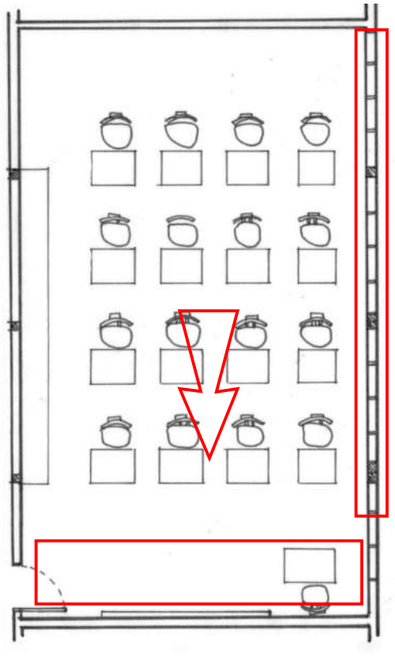
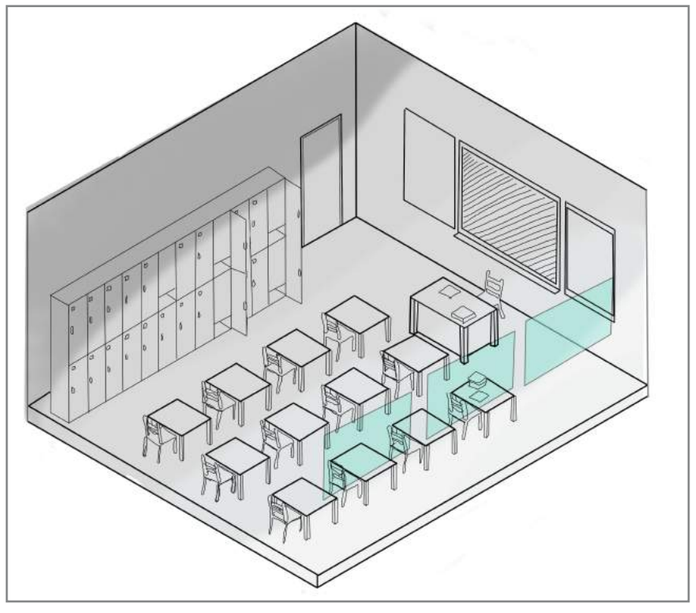


fig. 1-9 "TRADITIONAL SCHOOL" FLOOR PLAN

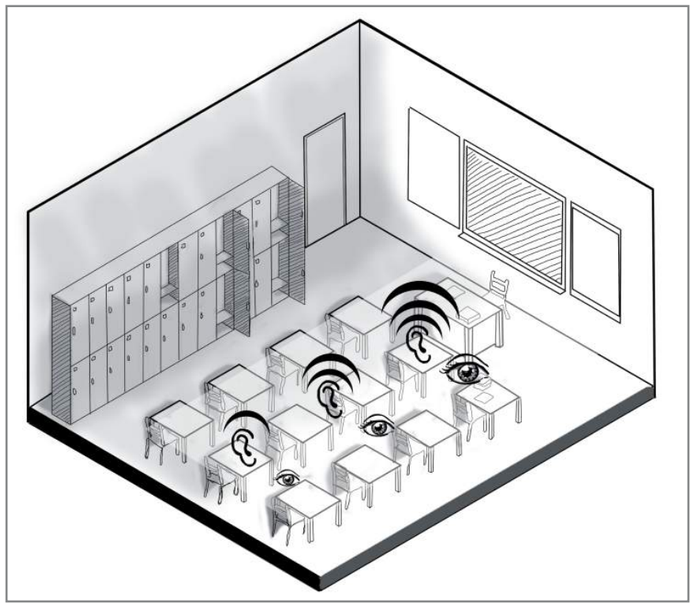
1.4 IDENTIFYING THE DESIGN CHALLENGES

Authentic learning is being used as a new teaching method focused on projects and activities that relate to real life problems and questions. This teaching method produces not only physical projects but opportunities for experience learning. As a set of ideal values a public school building that supports authentic learning must accommodate **group activities of various sizes**, it must create a classroom environment that **encourages discussion of the material** and it must **blur the boundaries between classroom and activity spaces**.
(Admin, ERN; Authentic Learning; Horn, Michael B; Partnership, Great Schools; Perez, Brayan h)



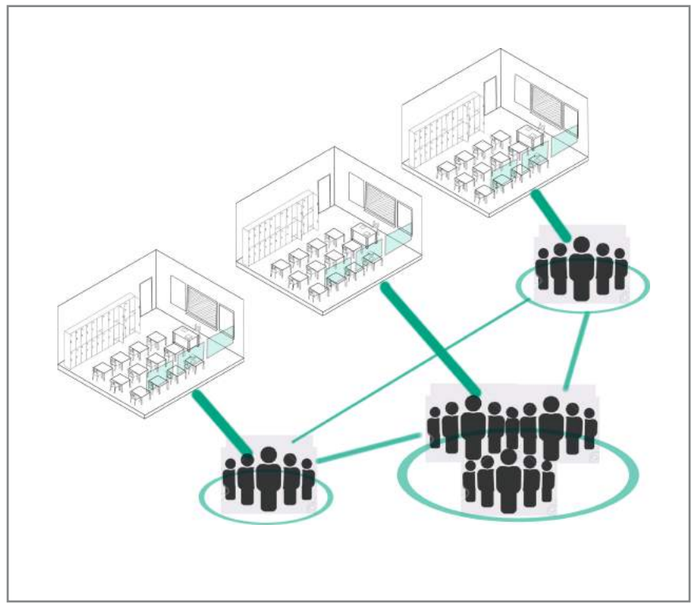
Problem #1 Confined spaces

This refers to the limitations in group sizes. Students are limited to only their classmates. Opening up the students to group with classmates from anywhere in the school would allow for more perspectives on the information.



Problem # 2 Clarity as influenced by distance

This refers to the shape of a classroom impacting a students ability to hear or see clearly both the teacher and their classmates. Discussion of the information can happen more easily when everyone can see and hear each other.



Problem # 3 Limited interaction and opportunities for activities

This refers to a students ability to interact with peers from other classrooms, kn different grade levels and age groups. The current model separates students into age groups, which often times divides siblings or close family members in the school environment. That example lends itself to the whole student population who stand to benefit with the larger group of peers to choose to interact and learn with.

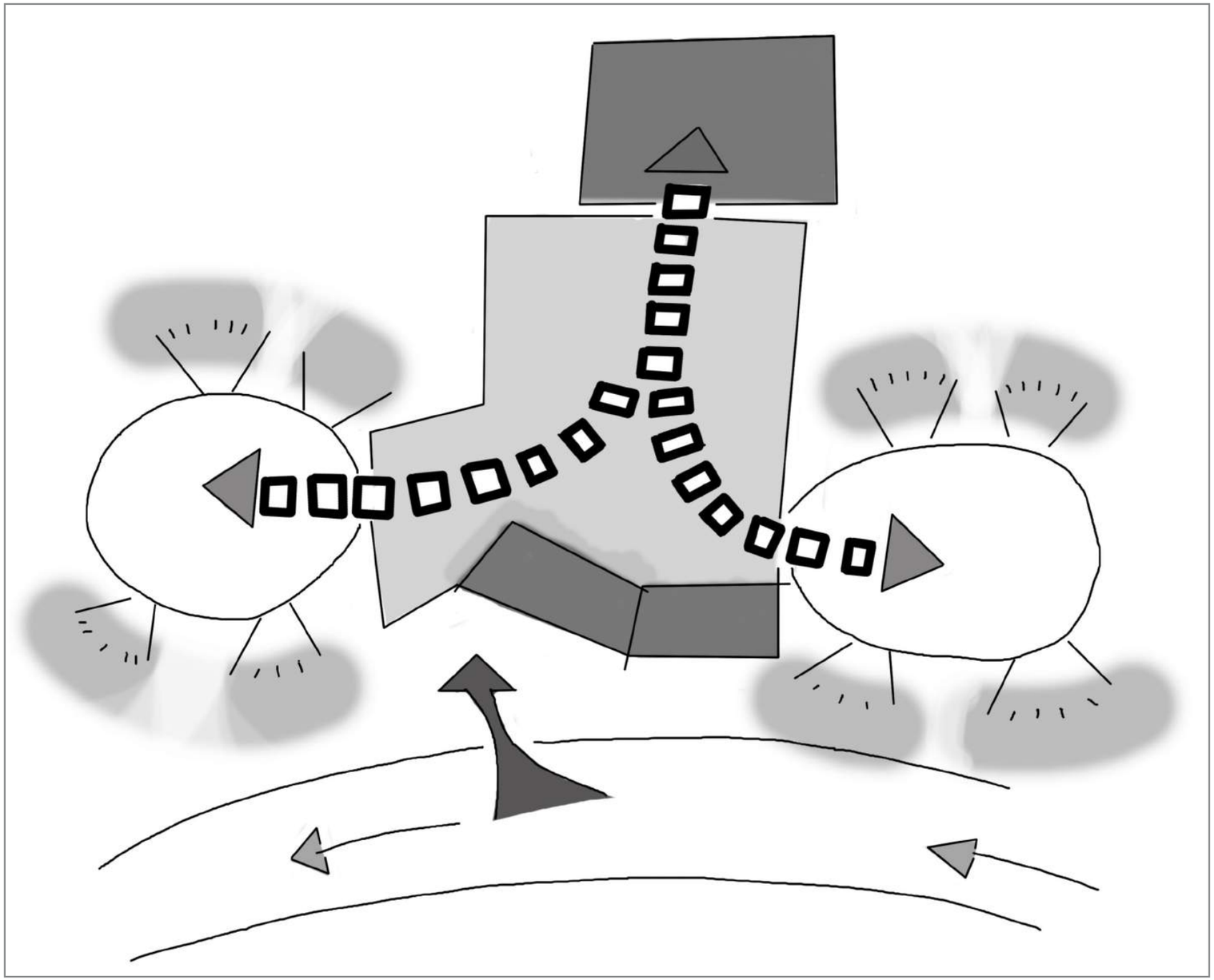
1.5 CHAPTER SUMMARY

Currently a traditional public elementary school design does not support the new creative and engaging teaching and learning methods.

Failing schools involve the combination of factors such as failing test scores, rigid curricula, lack of creative outputs in a typical school day and the impact the shape of the classroom has on the learning environment.

Authentic learning proposes a set of values in which a learning environment can be redesigned to encourage and support the development of creative and critical thinking skill through real life projects and activities.

02 ALTERNATIVES, PRECEDENTS AND DESIGN PRINCIPLES



PUBLIC SCHOOL PARTI DIAGRAM
-DIGITAL MEDIUM

2.1 Alternative school options

Alternatives to the public school route is often costly and requires creative solutions for transportation. Parents first think of private school as the go to option asking for government aid to move their children from the local failing public school.

However after doing some research parents find out about charter school options, home-schooling and even private tutors. Much to their delight these alternatives are gaining more support from the community. while these options are great for the few and short term of the education system, the long term for public education is fighting a losing battle. Public education is the measurement, so to speak, for a society's basic level of intelligence. As such, if the public education standard is under-valued then this reflect on how education as a whole is seen.

Conversely these alternative remind both parents and students that there is more than just one way to accomplish a task. Private schools offer a large variety of unique and different classes and teaching methods mostly because these schools are directed under a different set of principles. Similarly charter schools and even home-schooling options also have some freedom in how they are able to reach the government pre-set goals.

Another thing these alternatives have in common is their approach to what a learning environment should look like. With more freedom to teach in non traditional manners means the classroom can experiment with new design such as all glass walls, sliding walls, out door classrooms or even temporary structures with modular configurations.

The next step public education has to improve or even survive is to learn from these alternatives. This is not just speaking to the new buildings but to the existing structures that can be renovated. While the first options will give way to a very interesting building, the second idea focuses on the current problem and takes into account that small step begin to turn the question from where to send children to how to improve what is already there.

Public Schools

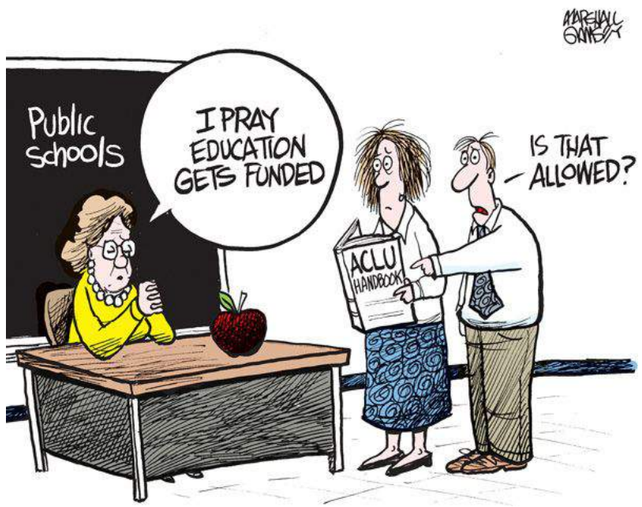
Public school is defined as a public educational facility that is government run and financially supported. While individual mission statements issued from the schools can vary slightly, the basic model is to provide compulsory education to the citizens between expressed ages. A basic ratio of students to teachers is what drive the square footage per classroom and even gives an estimate to how classrooms are in a building The typical grade levels in a public school building starts either with kindergarten or pre-kindergarten and ends ether with 4th or 5th grade.

The tradition design has adopted slightly, over the years, to the bare requirements to provide a basic education such as projector, computers, and student storage. However, now that the model of basic education is changing the designs so too should change.

Advantages associated with this typology are free education for all citizens. At this point something is better then nothing.

Disadvantages associated with this typology are the limited financial resources to improve and provide a better standard for the community and lack of coherence of teaching methods.

Main reason parents send their children to public school is because it is free, and it is a short distance from where they live with transportation options available. Public school is the most convenient option.
(Strauss, Valerie; What Qualities Make for an Ideal School or Classroom)



In this series of comic panels the authors are expressing the public opinion that public school is at the bottom of the chain when it comes to quality in direct response to the amount of funding a school gets.

fig. 2-1 PUBLIC SCHOOL PATTERNS
(i.pinimg.com/736x/7e/d2/b3/7ed2b3c8189ad5602537f854ae801a09--pensacola-art-projects.jpg.)
(www.thecomicstrips.com/properties/bizarro/art_images/cg54caff47b1987.jpg.)
(tbn0.gstatic.com/images?q=tbn:ANd9GcRp2SxWXmm1Gn2LU60BVeC6mMccVolkyErtlytIb9YJL6_UZ)

Private Schools

Private schools are defined by the sponsored organization running the daily programs and curriculum. in this case the school or groups of schools are supported by a private organization or private individual.

The definition also encompasses daycares, religious academies, and alternative school such as the Montessori model school. The private school makes up a smaller second most common school model outside of the public platform.

Advantages associated with this typology, more financial resources are available to improve and change the classroom environment. Often a school's reputation is used to pull in accredited programs which foster networking skill early in a students life.

Disadvantage associated with this typology is the financial responsibility which is an investment made by the parents.

Main reason in the case of religious schools, parents can choose to invest their children into a private academy because the school's mission and goals can be more in line with family values.

(Private School vs. Public School Breakdown)

In this series of comic panels the authors are expressing the misconception that private schools conditions students to feel entitled when the reality is often filled with harsh facts and difficult choices

fig. 2-2 PRIVATE SCHOOL PATTERNS

(i.pinimg.com/236x/e9/eb/27/e9eb27b1c34efa87ccfdeaf73e7d4bca--private-school-problems-catholic-school.jpg.)

(www.relatably.com/m/img/private-school-memes/oh-you-go-to-private-school-tell-me-more-about-your-refined-lifestyle-thumb.jpg.)

(greenleftyidealist.files.wordpress.com/2010/11/obama-private-schools.jpg.)

Charter Schools

Charter schools are defined as a public school that is run by an independent organization. This typology has financial support from both the government and a private organization. A charter school is still required to meet public school testing standards.

Two common paths for a charter school are conversion and new build. In a conversion scenario a public school is converted in to a charter school. A new build refers to the status of the building history in relation to the public school model. A trend in the United States is that there are more conversion charter schools the new builds.

Advantage associated with this typology is the offering of a lot more options then in the public school model. This is due to the increased financial channels available.

Disadvantage associated with this typology is the program's focus is limited by the public school testing requirements.

Main reason parent choose charter school for their children is because it is an option available in the local community. often a lottery system is in place so students who do get in feel very lucky.
(Frequently Asked Questions About Public, Charter Schools)

In this series of comic panels the authors are expressing the flow of money in the public school system.

fig. 2-3 CHARTER SCHOOL PATTERNS
(capitalandmain.com/wp-content/uploads/2013/07/charters-525x365.jpg.)
(ousdparentsunited.files.wordpress.com/2017/12/cartoon_6-4.jpg?w=442&h=296.)
(i.pinimg.com/originals/ee/54/9b/ee549be07ea739ba1f74a8681f582bec.jpg.)

2.2 ADDRESSING THE PROBLEM

PRECEDENT 1

DSSI Elementary School Renovation
located in: Seoul, South Korea
architect in charge: Daniel Valle

The Architect's aim was to **maximize space that incorporate a shared activity space**. The solution here is to combine common utilities such as storage. Traditionally **storage takes a great deal of space** inside the classroom. Here it is shifted the common area. Access to this common are is provided with doors and a rotating partition.

The last thing to note about this renovation is the **curved wall as a break from the traditional** classroom front concept. This curve allows to the freedom of movement around the learning space instead of a forced focus.
(DSSI Elementary School Renovation)

fig. 2-4 INTERIOR CONDITIONS OF ROTATING WALL AND STORAGE SPACE
(DSSI Elementary School Renovation)

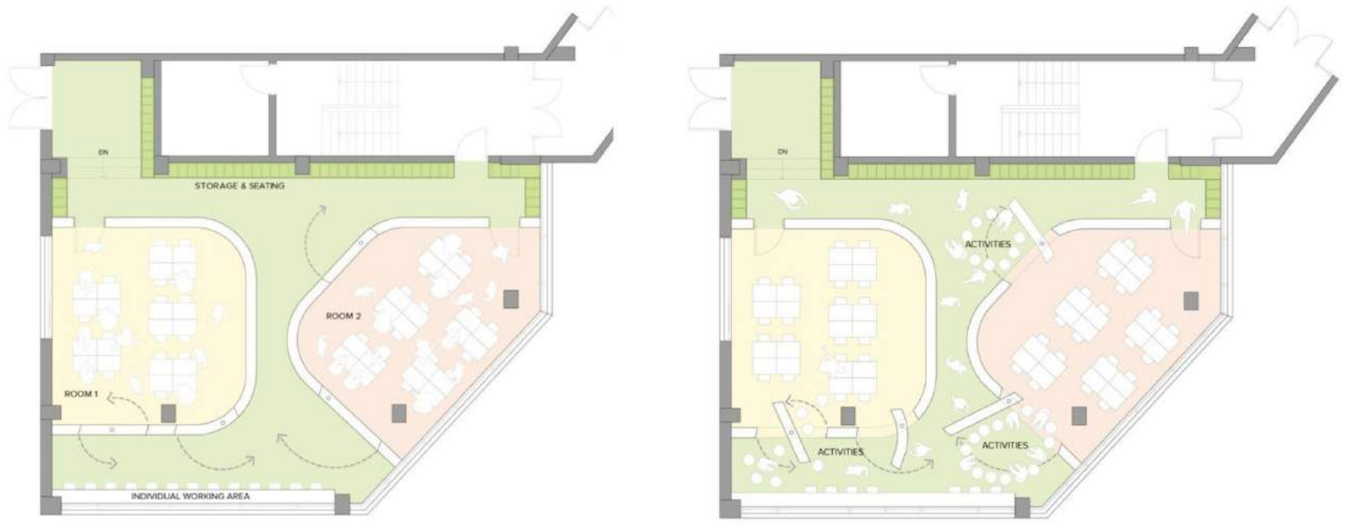
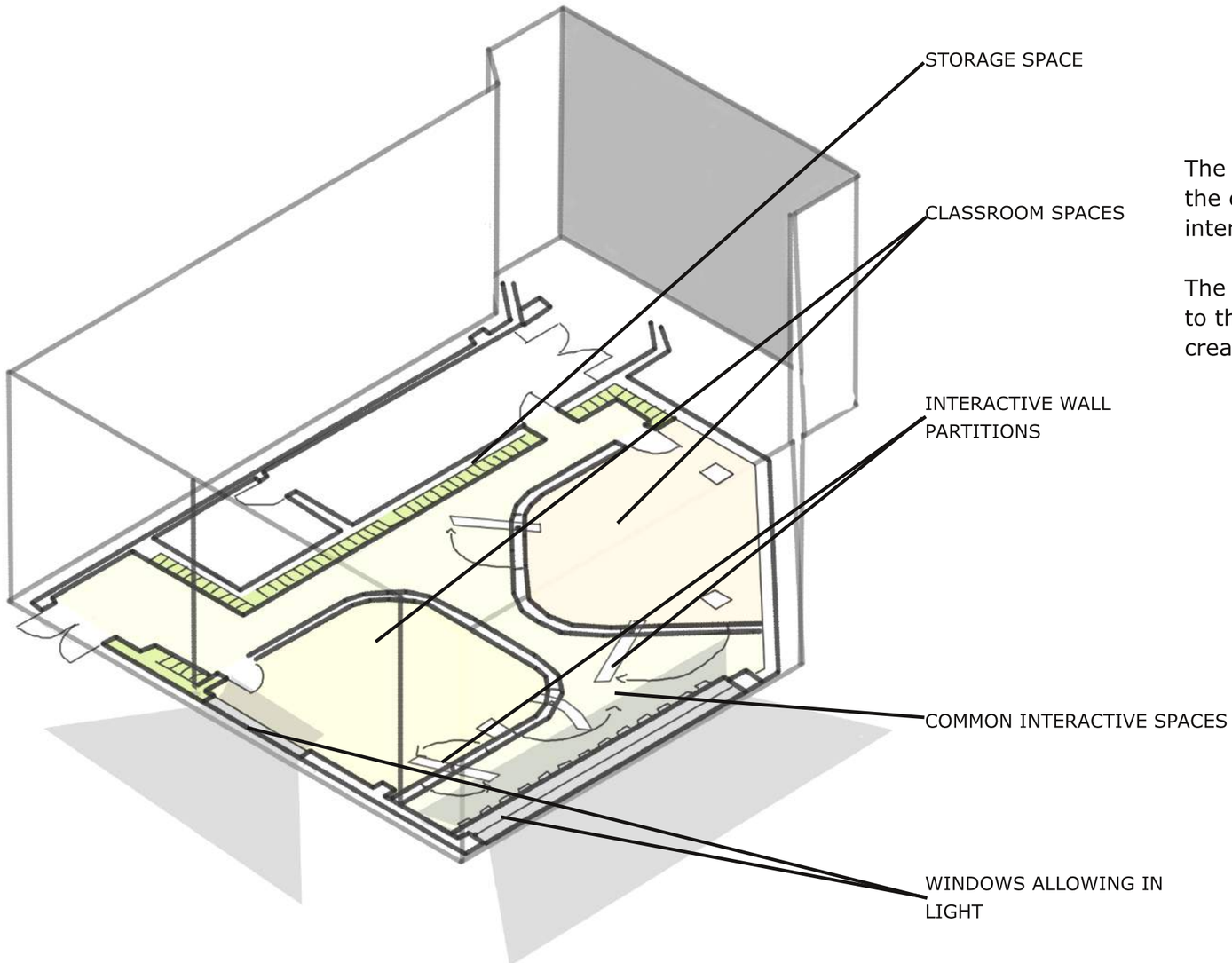


fig. 2-5 PLAN DIAGRAM OF ACTIVITY SPACE NOT IN USE AND IN USE
(DSSI Elementary School Renovation)



The classroom spaces are surrounded by the buffer of the common zones where storage and student interaction are allowed to happen.

The wall being interactive brings a dynamic element to the space which in turn allows the students to create and manipulate the space as the need.

fig. 2-6

fig. 2-7 EXTERIOR VIEW OF THE FRONT OF THE SCHOOL
(The Green Acres Academy)

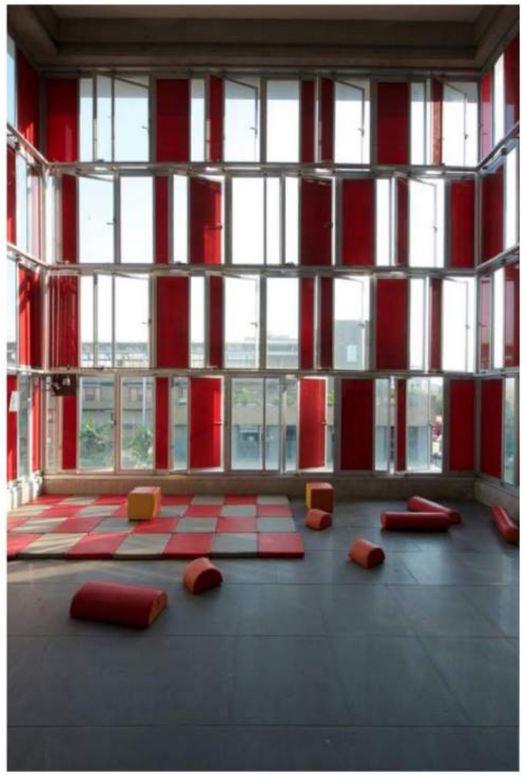


fig. 2-8 INTERIOR VIEW OF STUDENT COMMON AREA
(The Green Acres Academy)

PRECEDENT 2

The Green Acres Academy
located in: Maharashtra India
designed by: Tushar Desai Associates

A K-12 grade project built in phases in a dense city community as a way to stay current with technology. The challenge this design encountered was providing horizontal spatial qualities to a mostly vertical landscape.

A solution was to consider the **scale of the windows to contrast the long volumes**. This would a provide a sense or flow of time by way of **movement of the lights and shadows in a space**. This quality is best achieved in larger common spaces.
(The Green Acres Academy)

This design is to be built over a span of a few years as way of staying current. However the students while are the main focus of the design they understand that the spaces would also change for the incoming students.

This considerations allows for the common spaces to have a language that anyone entering would be able to understand in order to use the spaces to their benefit. The flow of the spaces follows the movement of the sun's light

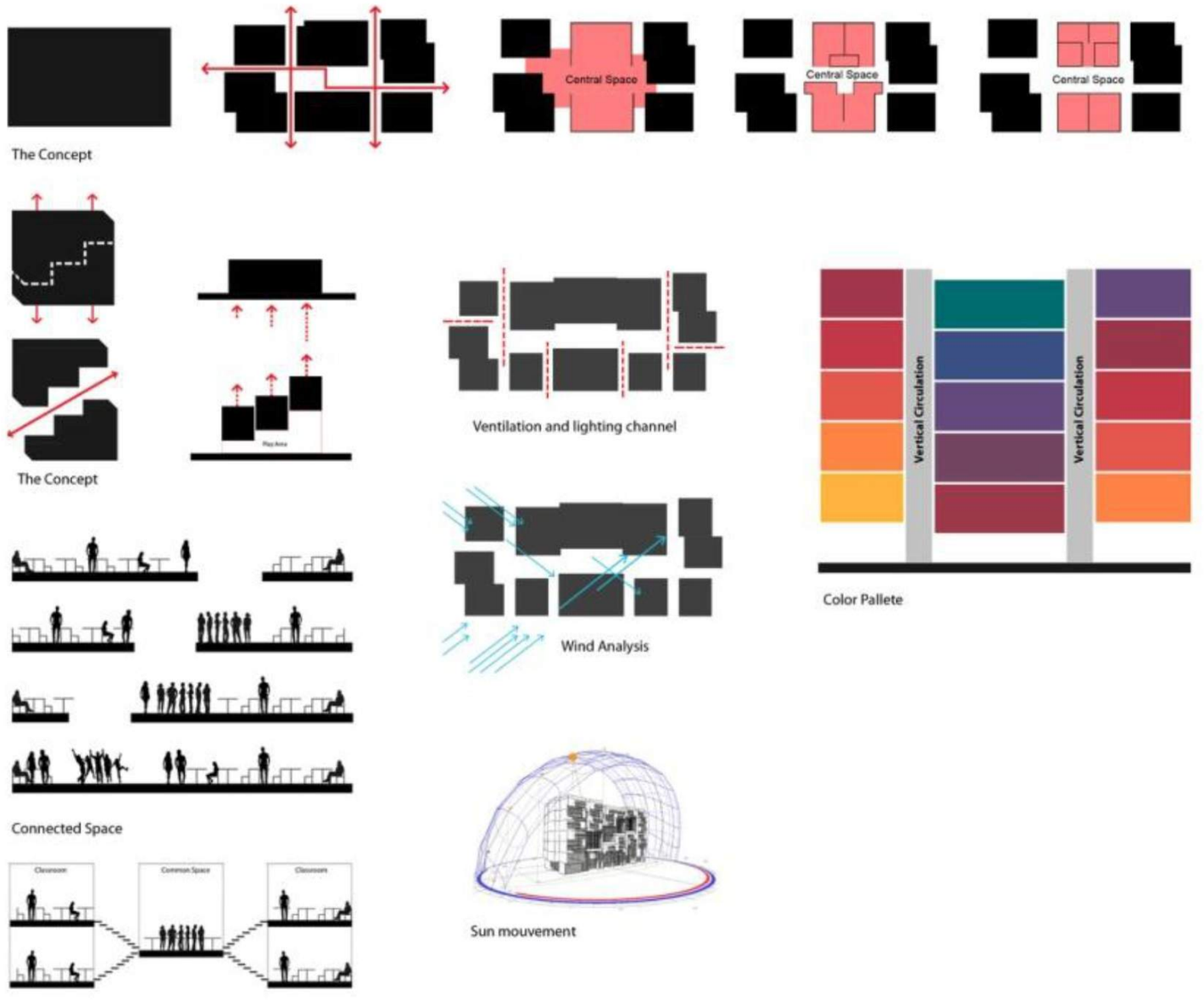


fig 2-9 THE SHIFTING OF COMMON SPACE VOLUMES IN RESPONSE TO LIGHT CONDITIONS
(The Green Acres Academy)

PRECEDENT 3

Kindergarten in Guastalla
located in: Italy
designed by: Mario Cucinella Architects
built in: 2015
area is : ~15000 ft2

This kindergarten environment was truly design with the child as the center concept. **There are lots of spaces to discover and ample light conditions.**

A distracting amount of sight lines and a warm sense from the wooden material. **The shape sparks the imagination of the children** while lending itself to an eco-friendly and energy efficient use of the natural resources.

It accommodates around 120 children between 0 and 3. (Kindergarten in Guastalla)

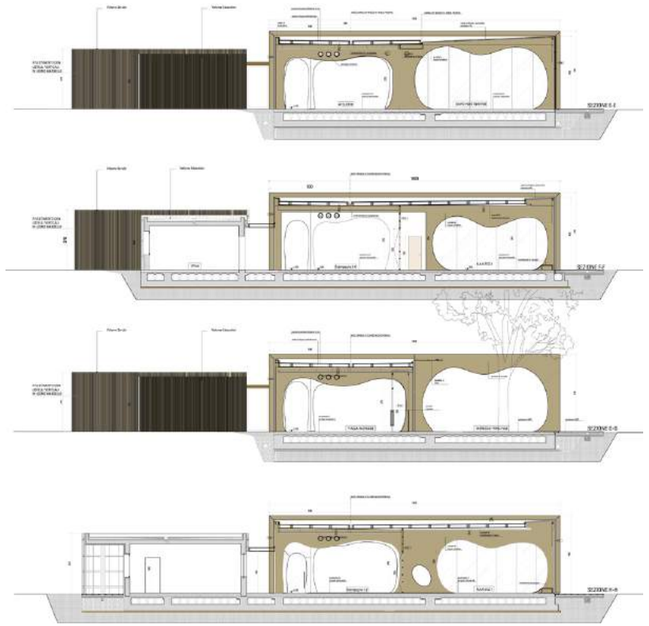


fig. 2-10 DIAGRAM OF TRANSVERSE SECTIONS
(Kindergarten in Guastalla)

fig. 2-11 INTERIOR VIEW OF CONDTIONS
(Kindergarten in Guastalla)

fig. 2-12 FLOOR PLAN
(Kindergarten in Guastalla)

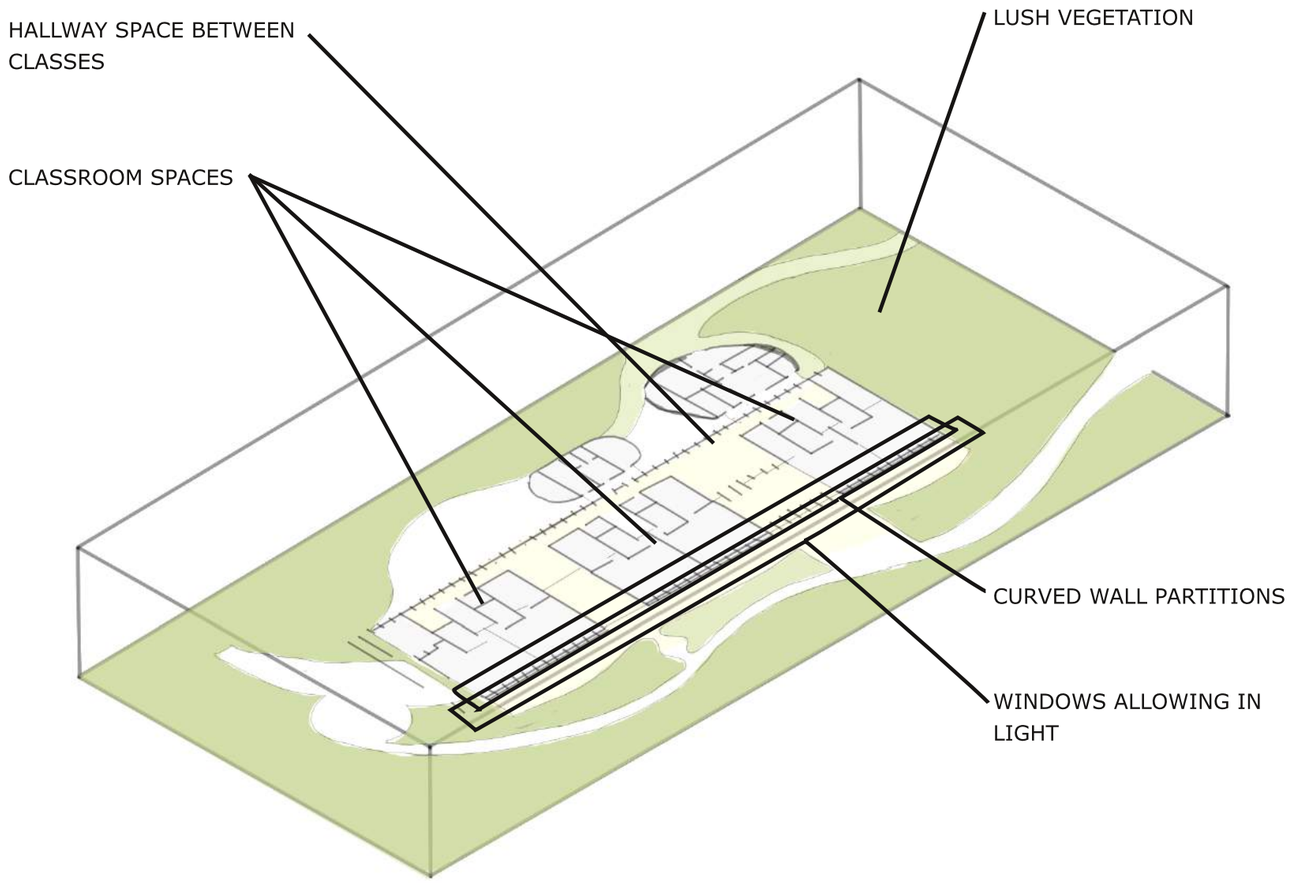


fig. 2-13

The patterns of the curved walls with the glass inserts set up the space for explorations through views and the play of light and shadows.

Each classroom can see into each other which give the space a sense of play.

This space however is for younger children who are encouraged to explore their environment and learn the art of focus on their own terms.

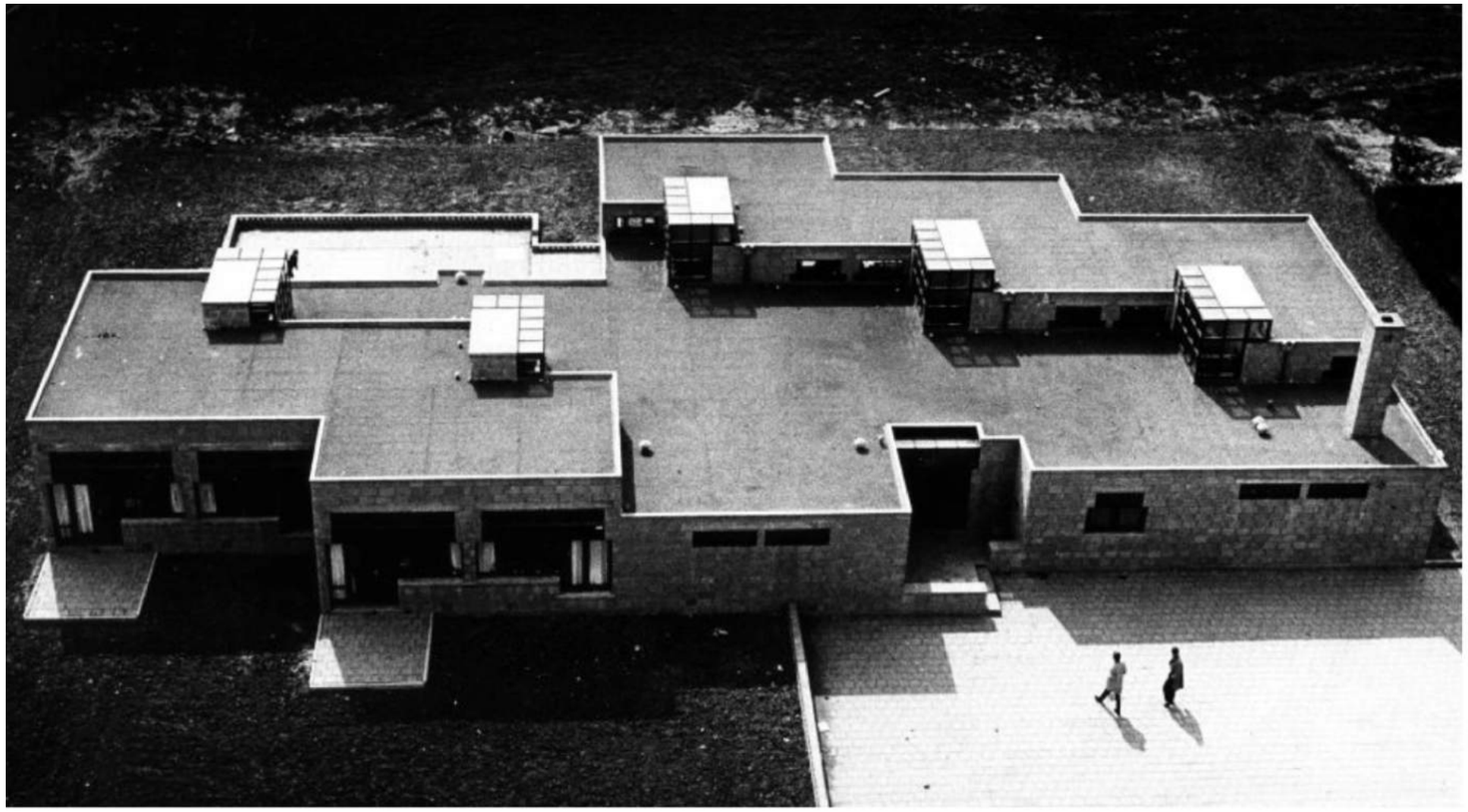


fig. 2-14 MONTESSORI SCHOOL IN DELFT
(Montessori School)

fig. 2-15 MONTESSORI SCHOOL IN DELFT EXTERIOR
(Montessori School)

PRECEDENT 4

Montessori School, in Delft
Location: Netherlands
Designed: 1960-66
Architects: Herman Hertberger, Manfred Kausen, and Roos Eichorn
Area: 675 m2 (7,265 sq ft)

This school's design is largely an exploration of the types of functions a space or forms can accommodate. In such the attention to **threshold is blurred** to allow for spaces to flow into one another or close off when needed

"I think **school should be like a small city**. In a city you have small places, large places, all sorts of secluded and semi-secluded places... [in which] all sort of activities [can take place]" -Herman Hertzbgerber

These details are important to understand because the activity of learning is not a straight forward method that teaching often tries to assumes.
(Montessori School)

This design attempts to blur the threshold to add and subtract to not only the activity space that a classroom can use but also to the circulation path where students can occupy.

Taking from the idea of what makes a busy city, this school floor plan and experience focuses on exploration and zones of activities. The students and teachers can portion off spaces as needed. This in turn add a sense of ownership to the space and by extension what it is connected with.

The central hallway space is the public area while moving deeper into the classroom allows for more private zones for lectures, interactions and instructions.

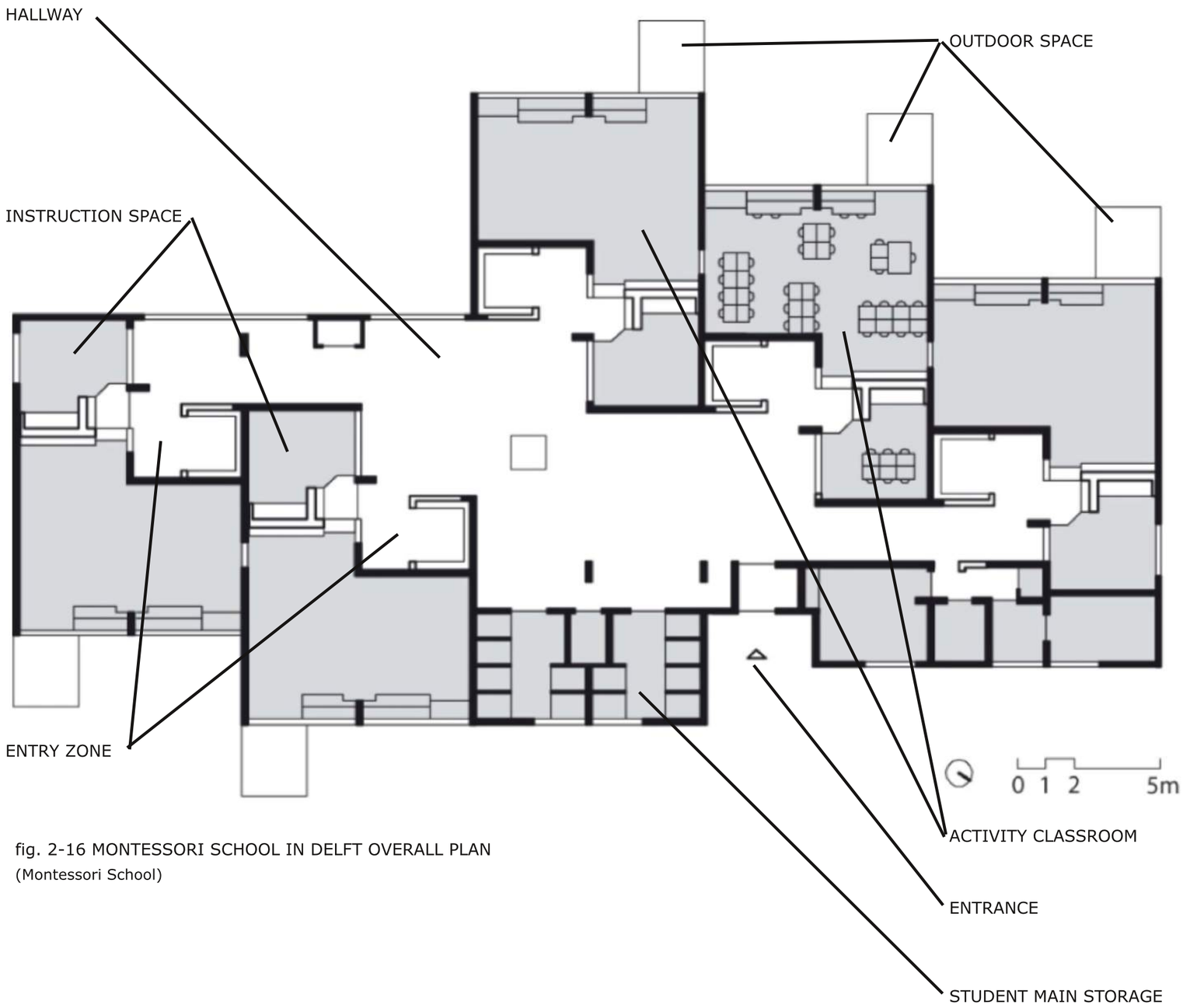


fig. 2-16 MONTESSORI SCHOOL IN DELFT OVERALL PLAN
(Montessori School)

2.3 DESIGN PRINCIPLES

2.3.1 CONFINING SPACES

In the public school design, classrooms are identified as confined, closed off spaces (**Figure 2-17**). In the above precedents, the placement of windows and open views change the perceptible boundaries that a space has.

Light is used as a design tool by means of understanding patterns and movement of both the students that travel through the buildings and how the light transforms the space breaking the frames of the boundaries.

The goal with this technique is to accommodate and support groups of various sizes. Where during lectures and instruction periods groups are comprised of small 15 to 20 student sections. While the activity spaces can support small groups of 3 to 5 interacting with other small groups comprised from the whole school. This activity space also supports access to the whole school student community as to allow groups to form and students to shift between them (**Figure 2-18**).

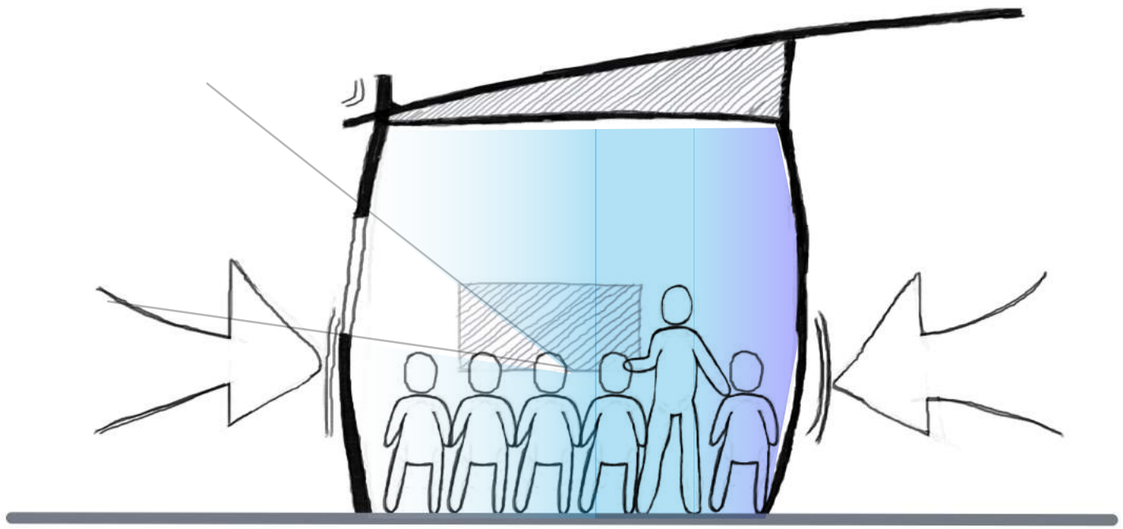


fig. 2-17 CONFINED SCHOOL CLASSROOM SECTION

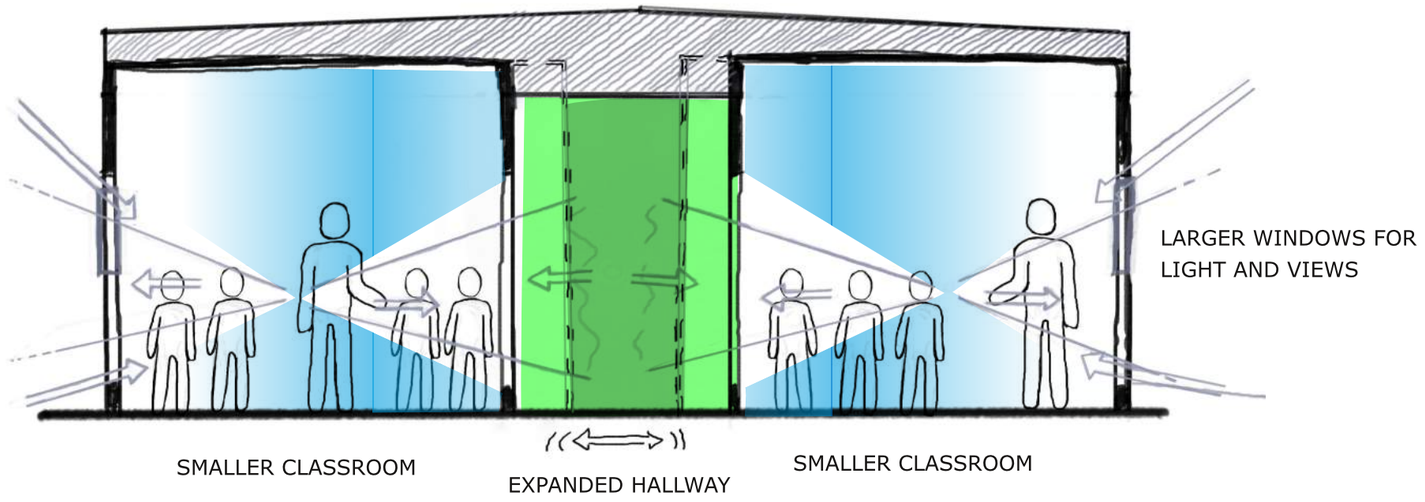


fig. 2-18 DESIGN OPEN IDEA CLASSROOM SECTION

2.3.2 CLARITY AS INFLUENCED BY DISTANCE

In the public school design, sound and sight quality is affected by distance from the source (**Figure 2-19**). This results in disengagement from students in the back of the classroom. In the above precedents sound and vision is addressed in the Montessori design by creating a more intimate zone for lectures and nothing else.

As such the design techniques that will be incorporated will shift functions and features out of the tradition classroom make-up to other more public zones leaving the classroom to became a smaller lecture space (**Figure 2-20**). Because the classroom is smaller a simplified desk arrangement of one large group or conference style table and seating is used. The idea of this design technique is to reduce the association of isolation a student attaches to the classroom from the solo desk arrangement.

These smaller lecture and discussion rooms will accommodate a large variety of students such as the deaf who relies primarily on sight to communicate with others.

Studies about open concept classrooms in comparison to the above design technique suggests that problems with distractions, such as noise from happenings that originate from outside the classroom framework is reduced by the glass barrier and the activities and discussions going on in the classroom.

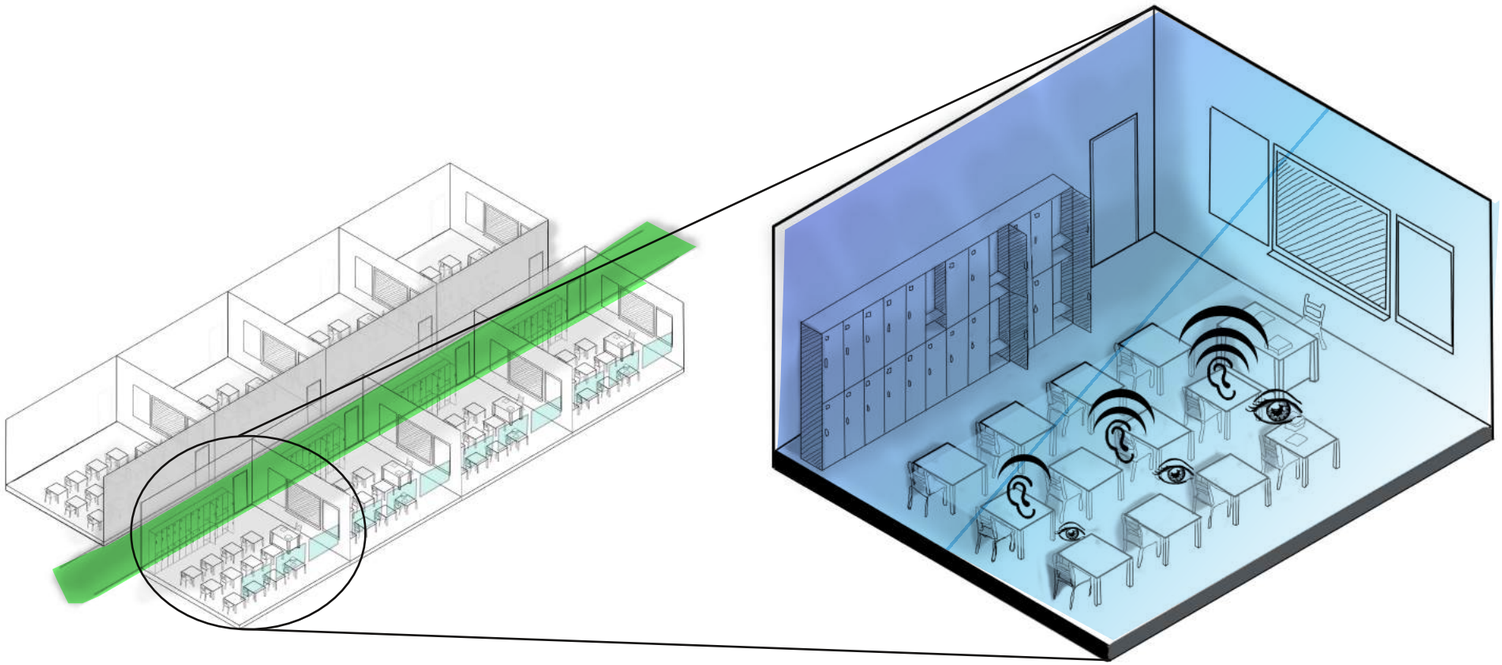


fig. 2-19 SOUND AND SIGHT AT A DISTANCE

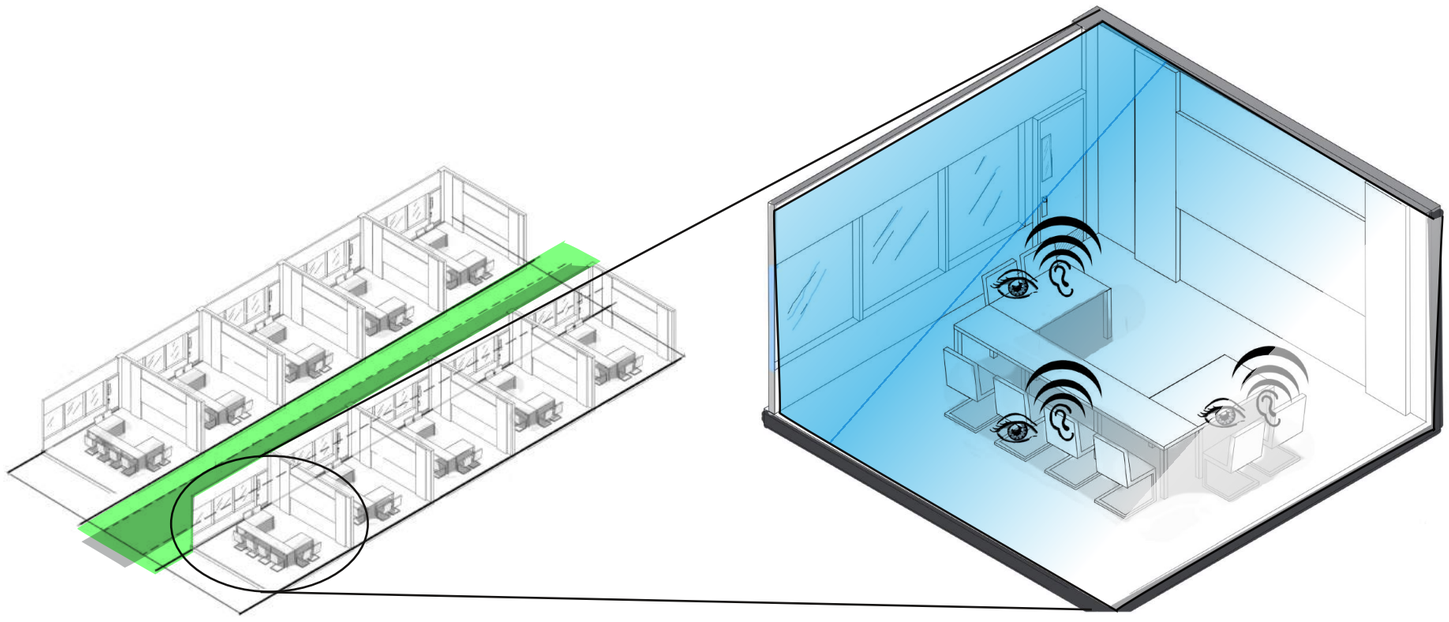


fig. 2-20 SMALLER CLASSROOM IDEA

2.3.3 INTERACTION AND ACTIVITIES

In the public school design, student interact with on average with 15 to 25 students in a school day. The exceptions are during the lunch period and gym class. The amount of activities are limited in the public school setting where the main focus is test scores.

In the above precedent students are allowed breaks periods and spaces of interaction within the circulation zones. The scenarios for this breaks involves a slightly older middle school and high school crowd where block schedules are use to provide class options and variety into their day.

The design techniques that will be incorporated from this idea will create pockets and semi-open areas in the circulation zones to provide more opportunities for interaction and activities. These zones can be used by the teacher to move a non-traditional activity outside of the classroom environment. This activity circulation zone can now also be used for school wide events that can happen daily or as scheduled events. (**Figure 2-21 and Figure 2-22**)

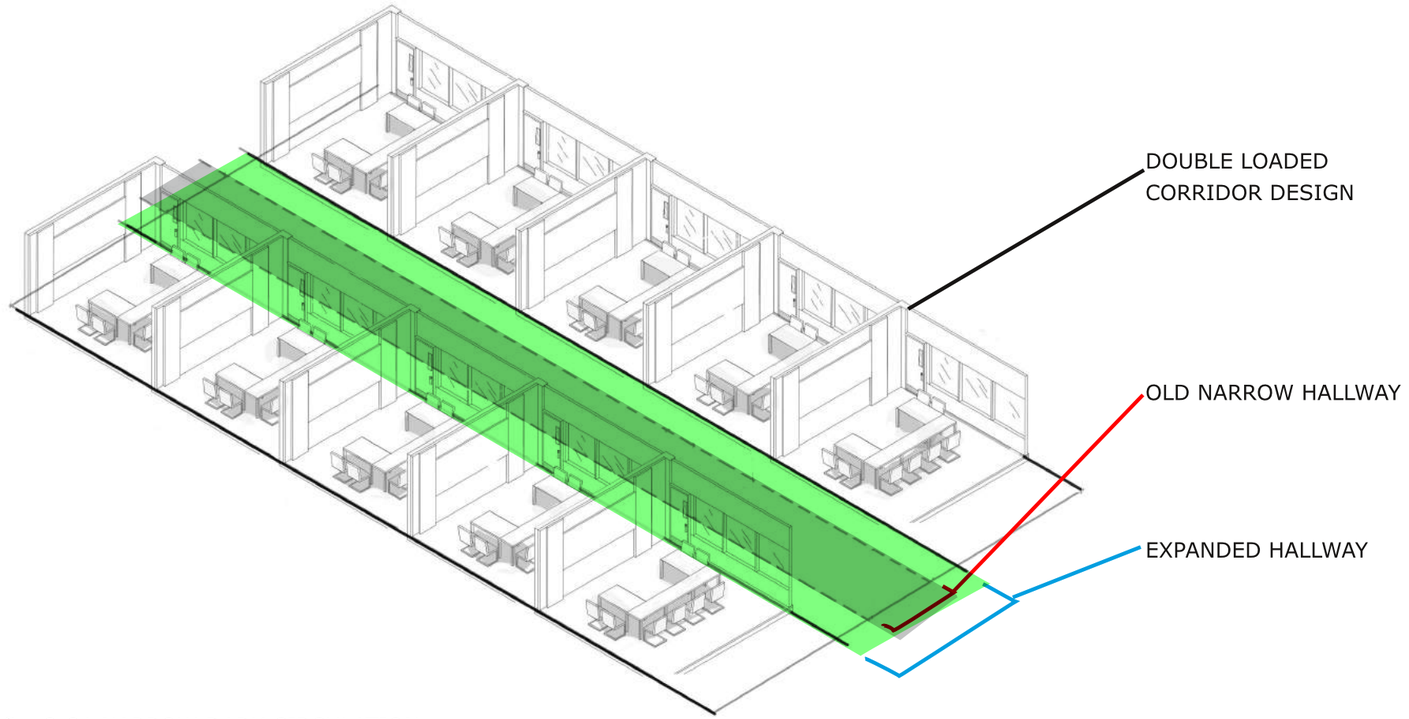


fig. 2-21 NARROW DARK CIRCULATION

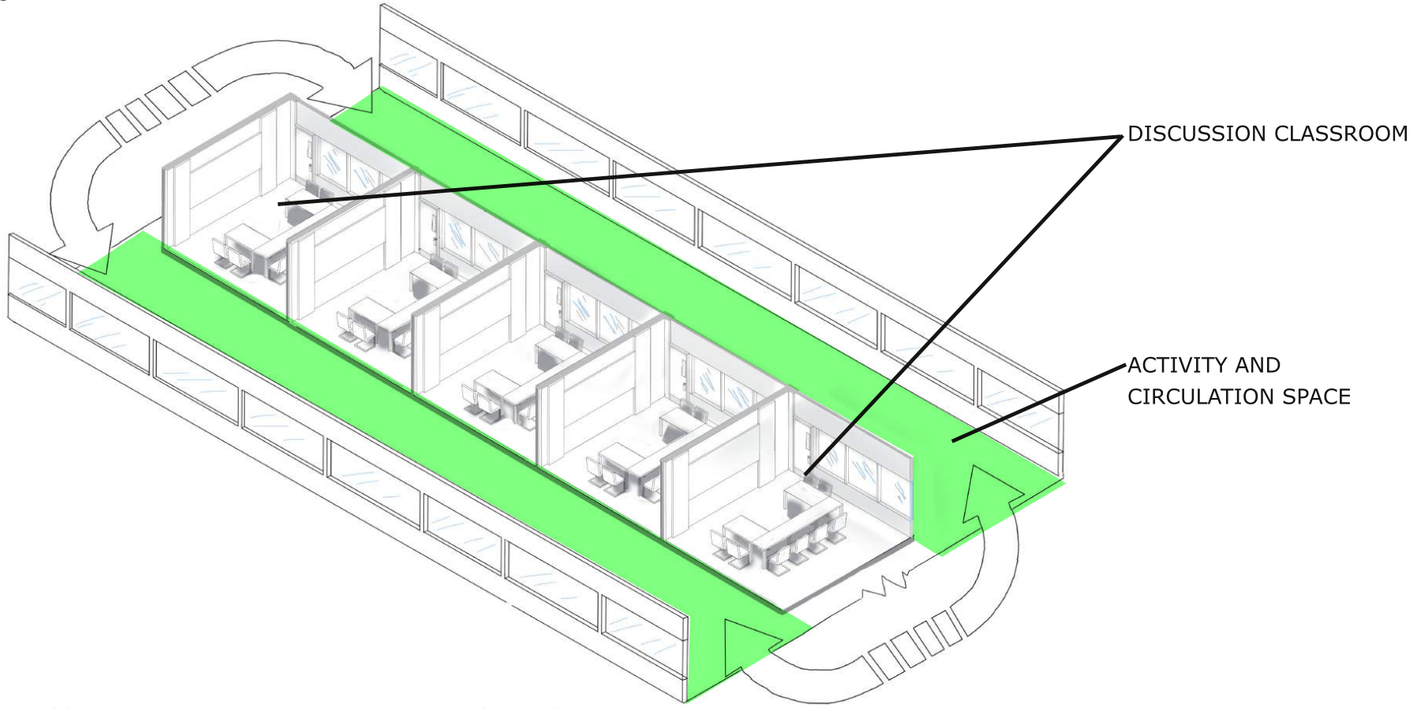


fig. 2-22 WIDE INTERACTIVE AND ACTIVITY POCKETS IDEA

2.4 CHAPTER SUMMARY

Traditional school designs lend to three major problem by creating classroom that feel confined, sound quality becomes a challenge with distance, and the lack of access and interaction with peer from other classroom make up an environment that lacks creativity and activities.

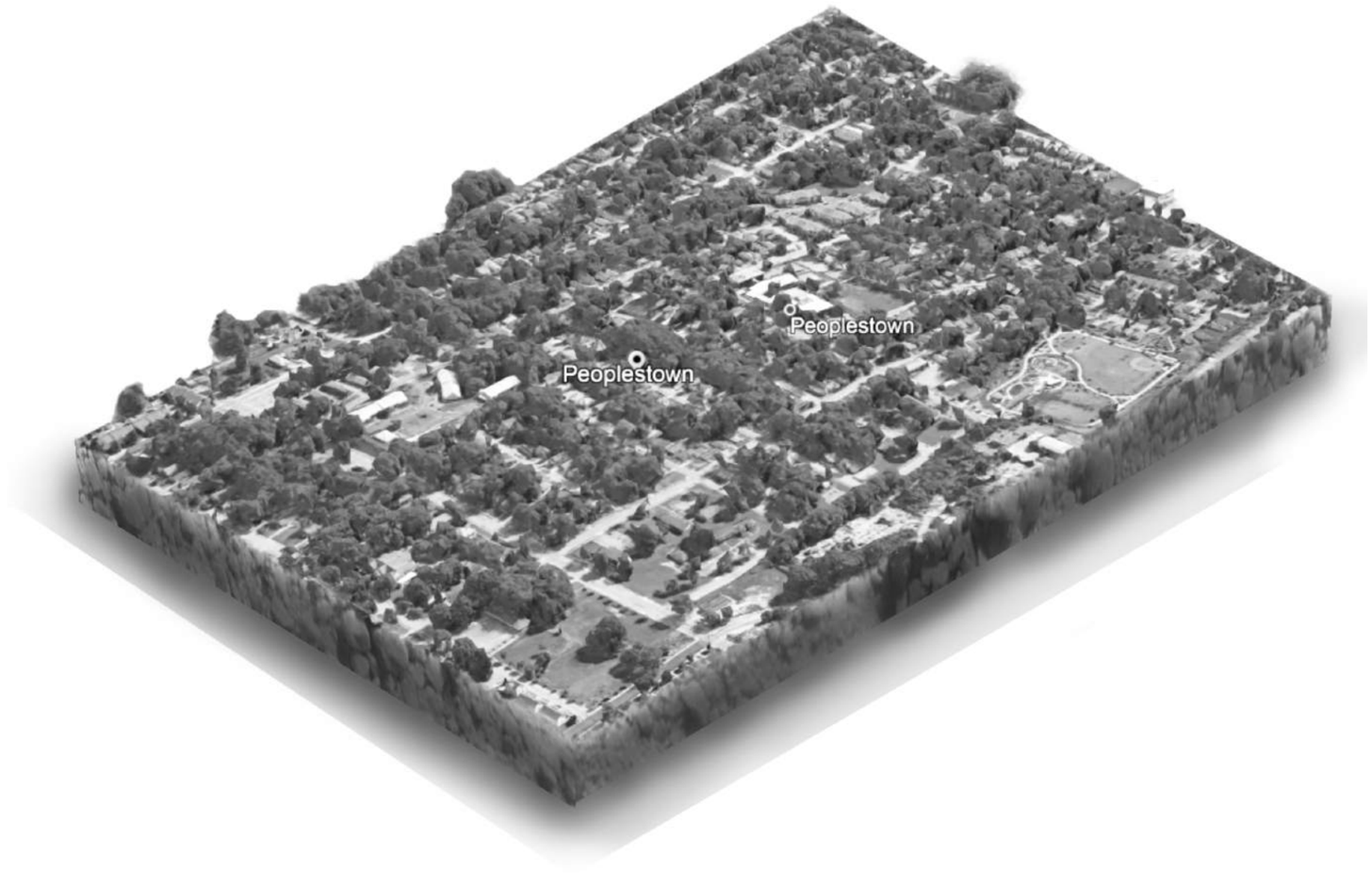
The precedents approach the traditional school design problems with solution that involve more student involvement and dissolves classroom boundaries.

The traditional classroom design have developed to incorporate a number of features and functions. This is to the student detriment by providing more obstacles then options.

The new design techniques will incorporate more play with openings and windows, smaller classroom units, and wider circulation zones to provide more opportunities for student activities and interaction. These design techniques are trying to address authentic learning conditions.

Authentic learning environments are trying to support groups of varying sizes, reduce distance related problems in the classroom setting and allow for borders and boundaries to dissolve between the classrooms and circulation activity spaces.

03 SITE



PEOPLESTOWN,
ATLANTA GA

3.1 THE TRADITIONAL MOLD

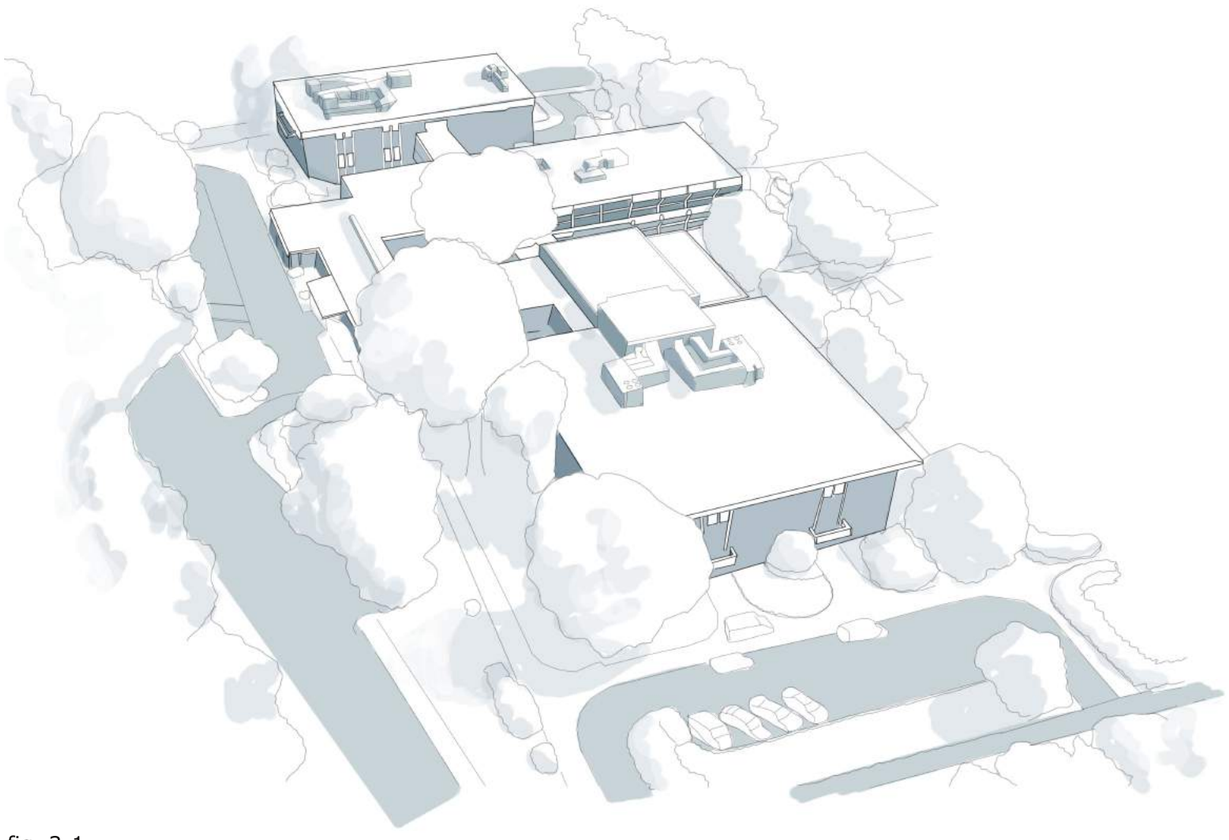


fig. 3-1

Barack and Michelle Obama Charter Academy,
Location: Fulton county Georgia, USA.
School Area:70,000 sq ft

Student teacher ratio: 15:1
Student population: 275
Grade levels: kindergarten to 5th grade

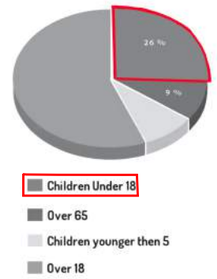


fig. 3-2

AGE GROUP

26% of the population in this community is between the school ages of 5 to 18 years old.

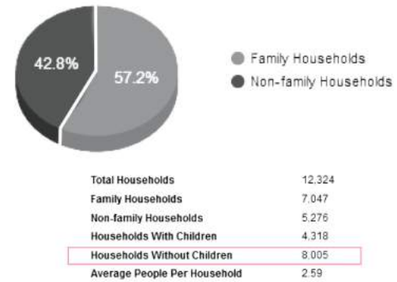


fig. 3-3

HOUSEHOLDS WITH CHILDREN

The larger portion shows that this area is geared more towards families.

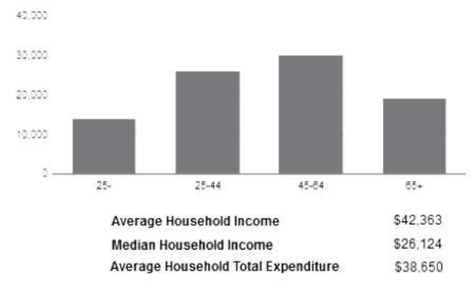


fig. 3-4

INCOME

In comparison to the poverty level for Georgia, which is between $11,000 and $28,000, this community is on the low income scale.

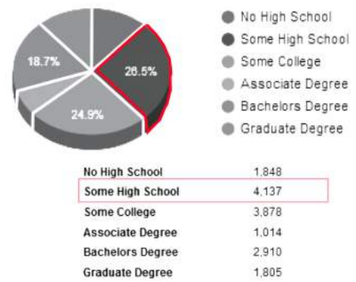


fig. 3-5

EDUCATION

The last statistic that points to the common set up for a traditional school mold is the level of education that the community is made up of.

3.2 SITE ANALYSIS

fig. 3-6 ATLANTA PERIMETER MAP

fig. 3-8 UPPER ENTRY FLOOR PLAN

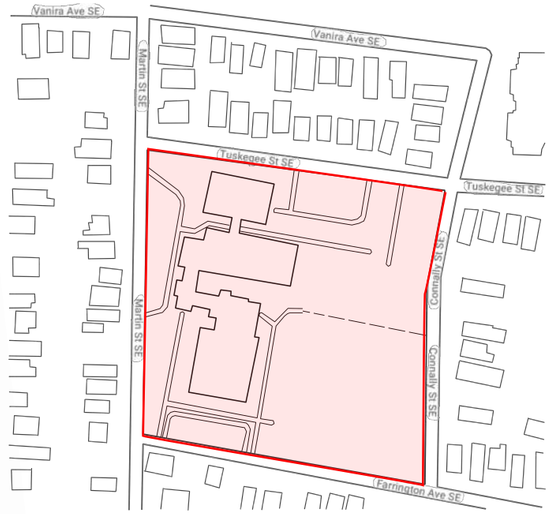


fig. 3-10 SITE ROOF PLAN

fig. 3-7 PEOPLESTOWN MAPPING

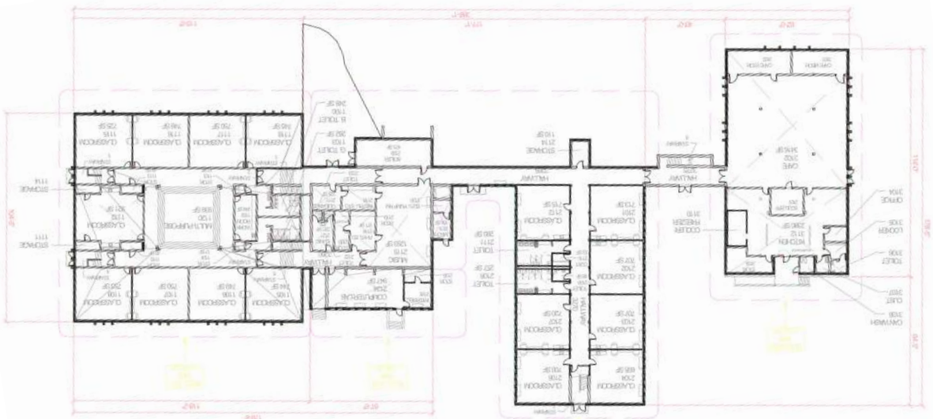


fig. 3-9 BOTTOM FLOOR PLAN

Located in central Fulton county (**Figure 3-6**) tucked behind rows of houses and apartments (**Figure 3-10**) Barack and Michelle Obama Charter Academy uses the most of their sloped site to incorporate split level condition over two main floor. The choosing of this site was based on the demographic features which is based loosely on personally experienced conditions and how a similar environment compared fair in the education system.

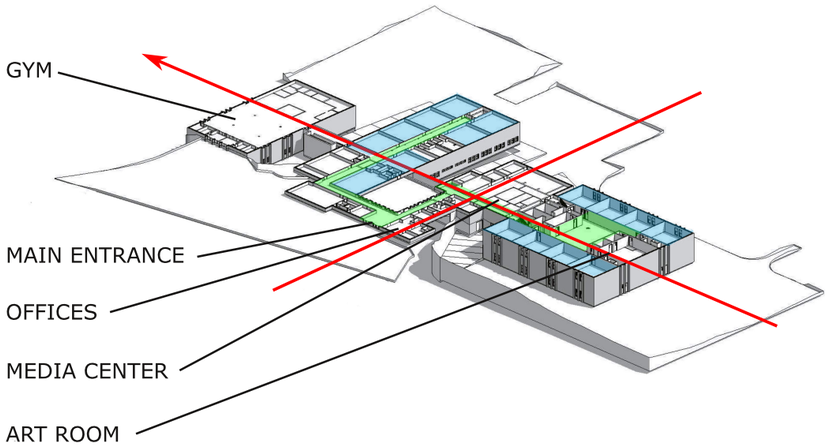


fig. 3-11

fig. 3-12 EAST SECTION

fig. 3-13 SOUTH SECTION

Program

Classroom 35,000sqft
[@ 760 per X 22]

Place:
Storage
Teacher's office
Wall of achievements

Activities:
Projects
labs
lectures/ presentations
naps
lunch
study area
video screening

Hallways 5,000sqft

Activity:
Circulation

Entry 1,200sqft

Place:
Front office
Nurses office
Security
Counselling center
Administrative services

Activity zones 14,000sqft

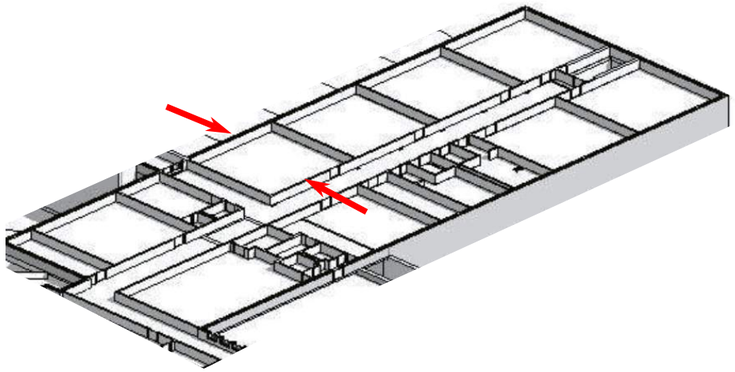
Place:
Lunch room Gym
Music room
Media center
Garden
Playground

Barack and Michelle Obama Charter Academy (**Figure 3-11**) adherers to the major problem found in the traditional school design. Classrooms use an exterior wall which has small openings for light and not much else for safety reasons. The sound and visual qualities in the classrooms conforms to the principle that distance is the ruling factor and lastly students spend a majority of their day in their assigned classroom with the same 15 to 25 students.

The structure consists of steel framing with brick infill and a language of a window ribbons that circle the entire school. A split level condition occurs on the southern end of the site following the drop in the site in that direction as well.

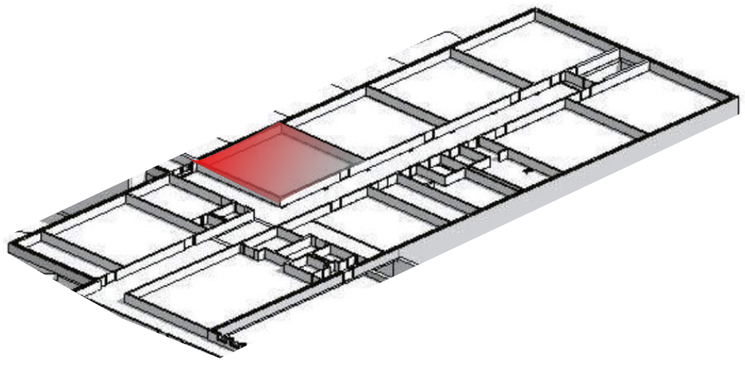
The site and building offer very little in terms of other buildings outside of the newly build early learning center for children under school age. Surrounded with an abundance of tree this simple design harps back to its construction period where skol buildings where accommodating more flexible classroom ideas. The thing to note about this school is that this school is a converted charter school. This means that previously the public school was failing and shut down due to low enrolment. Between the shut down and the reopening, this school has undergone some renovations. Mostly additions to address early education and playground zones that will be open to the surrounding neighbourhood.

3.3 COMMON PROBLEMS



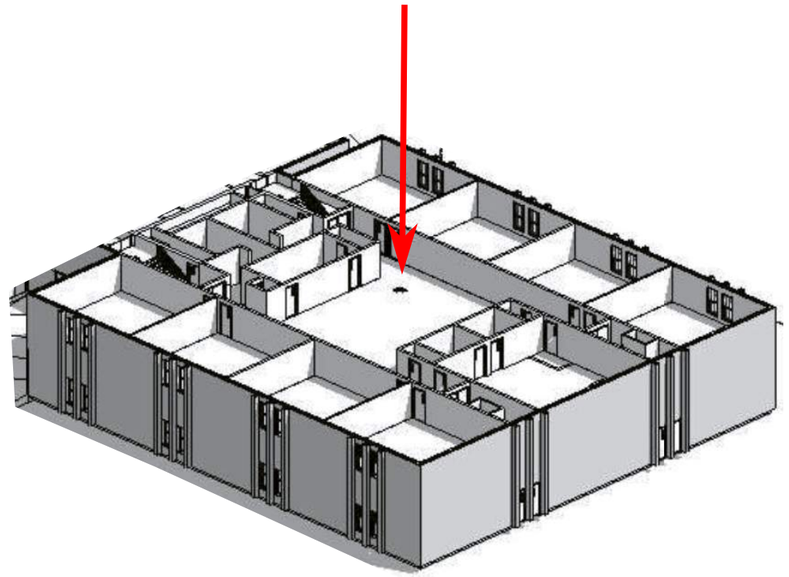
CONFINED CLASSROOM SPACE

Classrooms are aligned in rows to form double loaded corridors to capture light from the exterior walls. The limited space in the classroom can only support up 30 students. This limits transfers to the quality of discussions students can have given the control of the influenced information in the environment.



CLARITY AS INFLUENCED BY DISTANCE

Quality of the experience in the classroom takes distance into account. Student further from the teacher are at a disadvantage. Similarly any students with seeing and hearing impairments are at a disadvantage because they are typically unable to communicate well from a distance.



INTERACTIONS AND ACTIVITIES

Students are given a few chances to interact with the larger student population. The large activities zones can typically bring together a few classrooms in a single space however these spaces a few and far from one another making it a chore for the teachers to guide the students to this zones. As a result student have limited freedom to explore the school or have opportunities to interact with other classes.

3.4 CHAPTER SUMMARY

The Barack and Michelle Obama Charter Academy fits with the traditional school design as the three major problems correspond to the Common School model.

Factors that affect the success of the school design and the financial support is slightly improved because this school is a converted charter school.

This school is the ideal study because this school and surrounding context is similar to personally experienced conditions and is similar to the common conditions experienced by other parents as expressed in online blogs and vlogs.

Unique features to the site are add-ons and large slope across the entire site. This school is a free standing building and is tucked into a neighbourhood of houses and apartment a way from the main streets.

04 DESIGN STRATEGY

PUBLIC SCHOOL EXPERIENCE IDEA PROPOSAL
-DIGITAL MEDIUM

4.1 PROPOSAL DESIGN

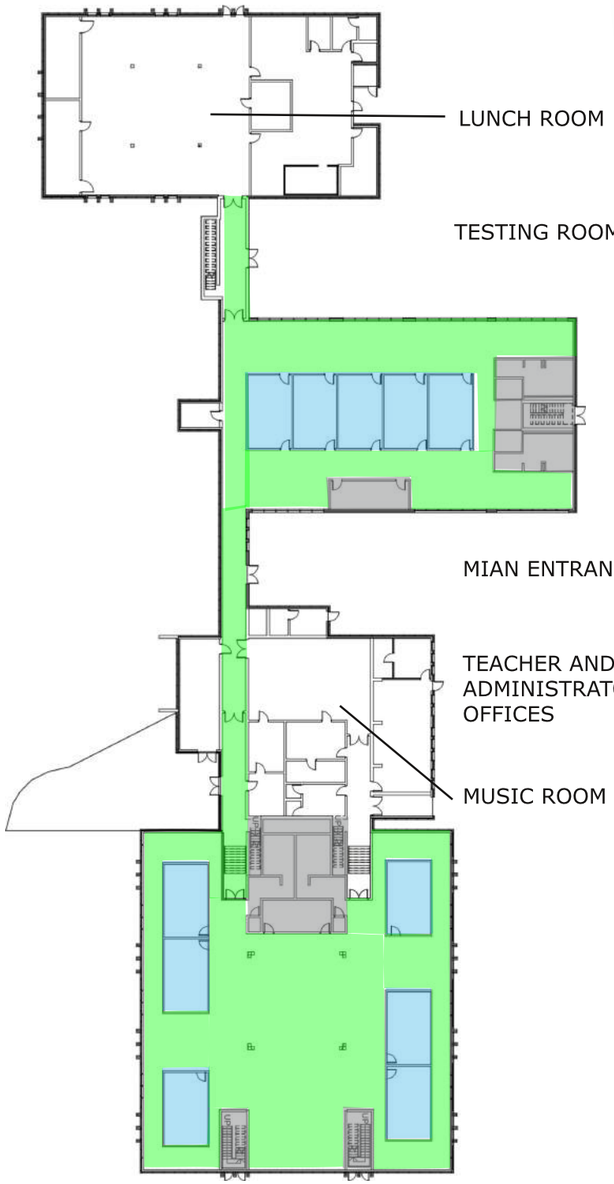


fig. 4-1 LOWER FLOOR PLAN

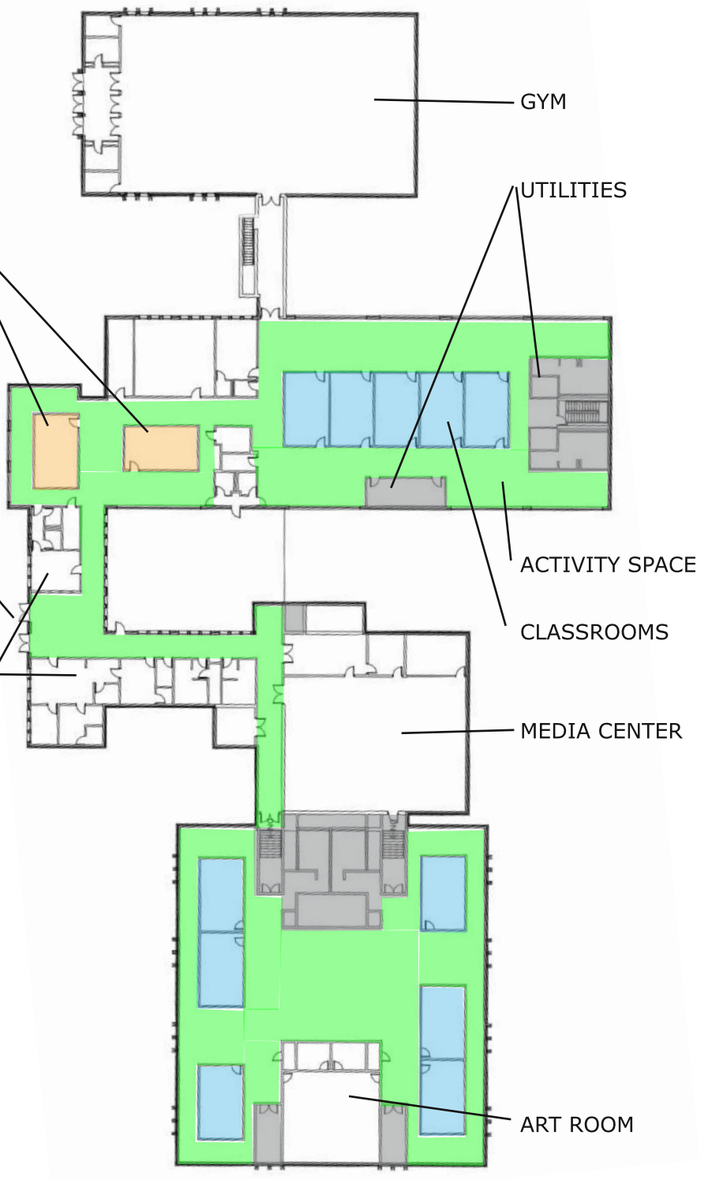


fig. 4-2 UPPER FLOOR PLAN

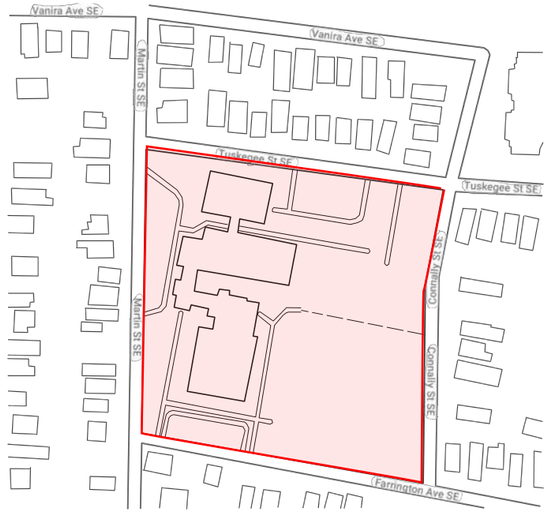


fig. 4-3 SITE ROOF PLAN

fig. 4-4 PERSPECTIVE VIEW

fig. 4-5 GALLERY SPACE

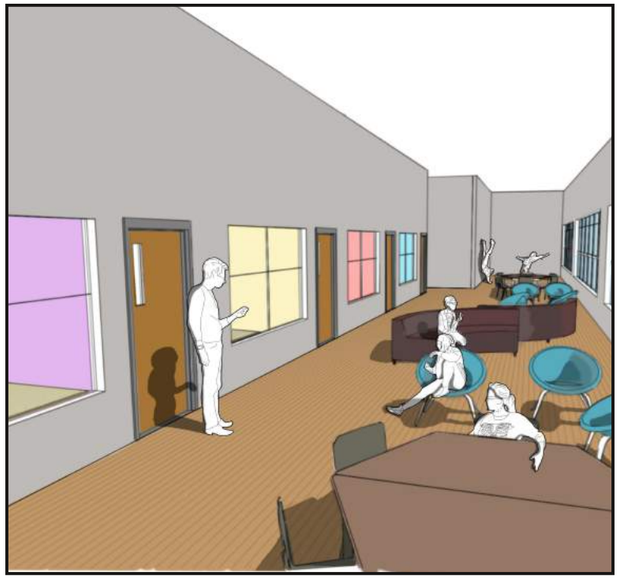


fig. 4-6 MAIN ACTIVITY CIRCULATION SPACE

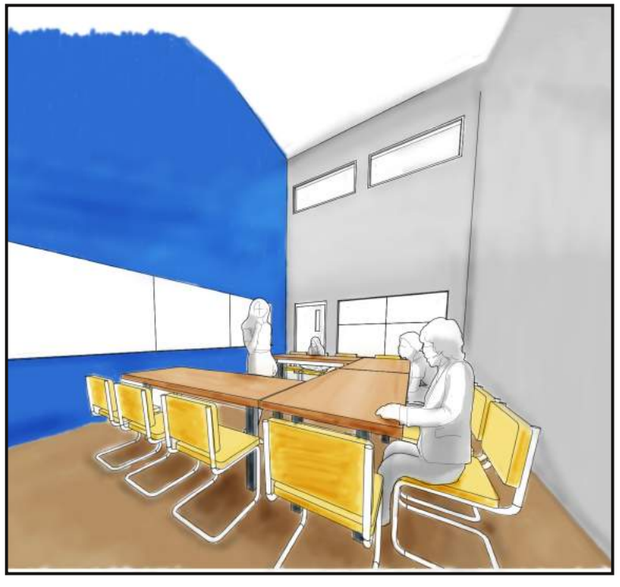


fig. 4-7 SMALLER CONFERENCE CLASSROOM

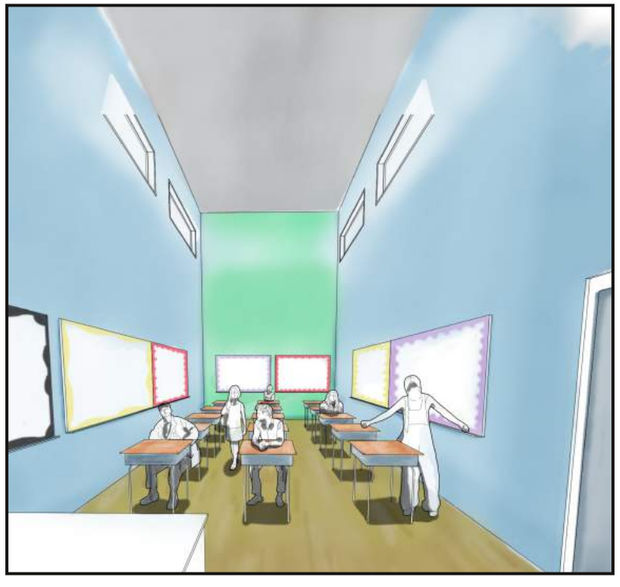


fig. 4-8 TEST TAKING ROOMS

If student storage and teacher's desk would be removed from an ownership position from the classroom where then would students display their work. The response was for a gallery space, (**Figure 4-5**) which would be created from the ends and back sections out side of the classrooms as a part of the activity circulation zone.

The majority of the design goes to shifting students into activities zones (**Figure 4-6**) outside of the now smaller classrooms. These wider circulation routes incorporate pockets of tables and interactive seating for student to gather into varied sizes of groups to work on activities.

With the classrooms (**Figure 4-7**) becoming smaller the attention the the arrangement of the desk became to the key focus. The best configuration is something to conforms to a office conference setting where students gather closely around a large group desk arrangement. It is important to note that this arrangement is not supportive of classroom assignments or test taking but rather controlled group discussion lead or guided by a teacher. This set-up is a response to the authentic learning method where activities are done in a group format.

Lastly an important environment in this school program is a classroom set-up that supports test taking as administrated by teachers (**Figure 4-8**). This space is the only exception to the design strategy in that dark confined environments allows the students to explore their mind to produce answers to questions. This is in response to the amount of creativity the activity requires.

Precedents Analysis

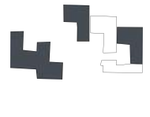
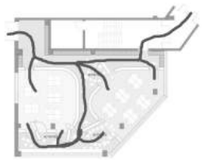
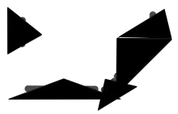
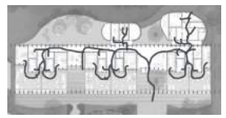
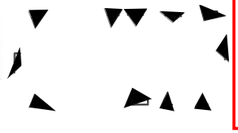
	Teaching Method	Student Teacher Ratio = 5 Students	Circulation	Views	Hallway Structure	Outdoor Classroom Space	Student Support Spaces	Teacher Support Spaces	Amount Student Storage	Activity vs Play Spaces
Montessori School, in delft	Activity Based									
DSSI Elementary School Renovation	Lecture Based converted to Activity Based									
Kindergarten in Guastalla	Mentor Based									
The Green Acres Academy	Lecture Based									

Table 1

From the precedent analysis a relation to hallway area and teaching method tie together. With this model moving forward the main concept will be to focus on shifting students in the hallways area for activities and interaction. From the renovation school precedent the correlation of hallways space is also the object of analysis as in this other model, the amount and attention to hallway area has been expanded.

Views and openings for daylight seems to take a back seat in the conversion of how the teaching method is experienced, however the attention to the boundaries and how openings are created or dissolved make the point of flow of presence and activity in a space.

4.2 CONFINING SPACES

Borrowing from the above precedents confined spaces will address supporting a variety of group sizes and activity types.

Classroom units (**Figure 4-9**) will feature more window area for more opportunities of diffused light. While the initial idea suggest distractions, the key component is the shrinking of the classroom size as a response to move activity out of confined space. Instead these smaller spaces will facilitate teacher instruction period and guided discussions. Activities and events will move to an expanded circulation space.

With the expansion of the circulation hallway space light is now a requirement for the amount of activity happening. This prompts a movement of the classroom from their traditional exterior wall position to the center of the wing structure. This will allow for the circulation hallway space to receive both light and views from outside.

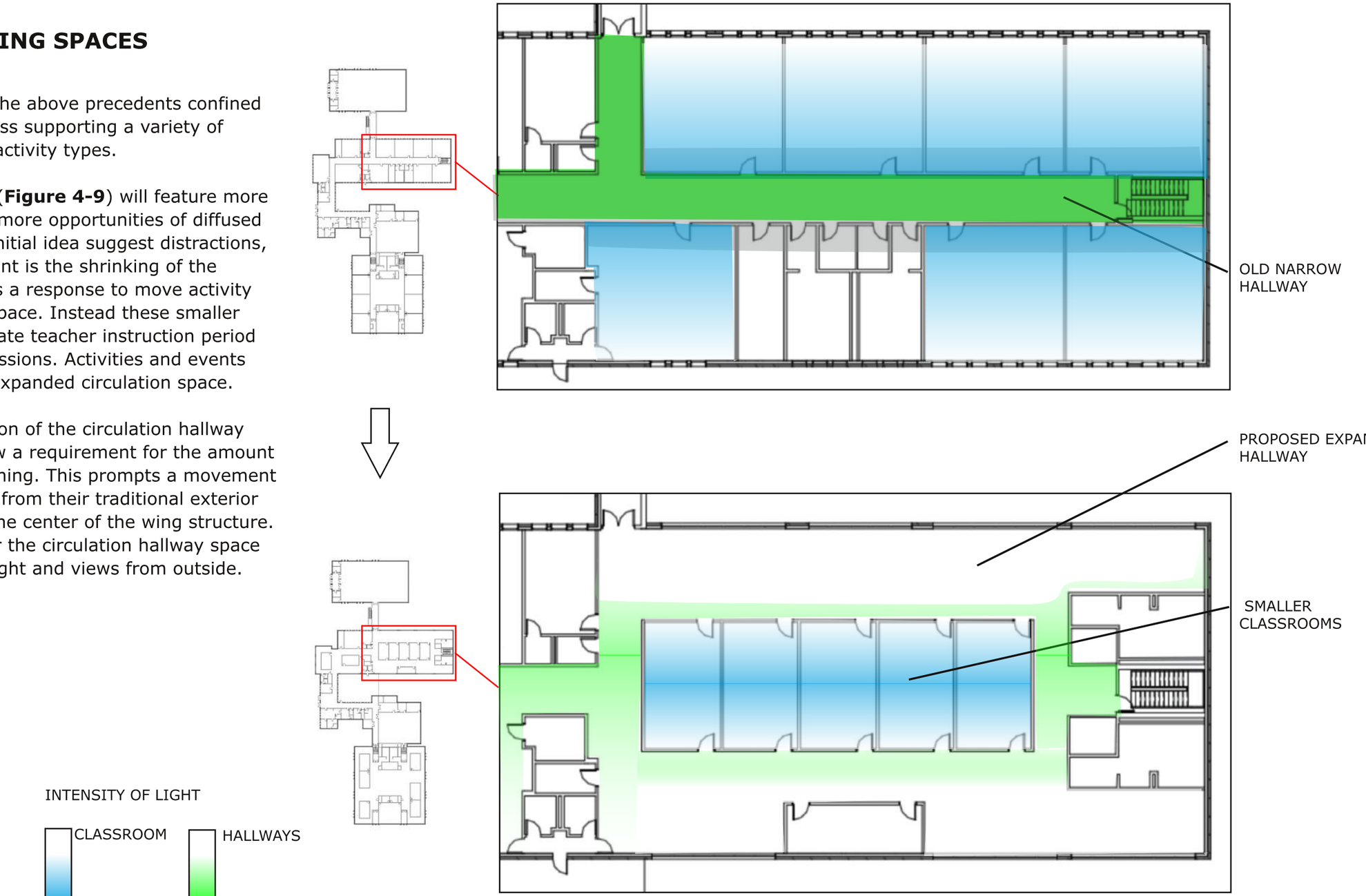


fig. 4-9 LIGHT DIAGRAM

4.3 INTERACTION AND ACTIVITIES

The largest transformation to the traditional school design is the widening of the hallways (**Figure 4-10**). as a result of the classroom shifting in both functions and importance in the students day. The hallway circulation spaces will now connect directly to exterior walls. Windows will be enlarged to allow for more light while views out and down reveal the sloped site.

The working idea with the circulation as an interactive hub is that desk, tables and seating surfaces populate the space for students to use, work or gather around and interact with. Providing the connection to the whole school's student population.

Activities can then be done in a variety of sizes groups of students. In this setting students can expand the learning from each other, unlike in the previous model with classrooms working under the influence of the teachers point of view. The students will now have a larger group of peers to ask for help.

This space also soften the actions of learning as students will be conversing with their peers, family members and friends about the topics that they found interesting or need help understanding.

Lastly the flow between lecture classroom and activity spaces blend into one another as the smaller spaces are completely surrounded by the activity circulation space.

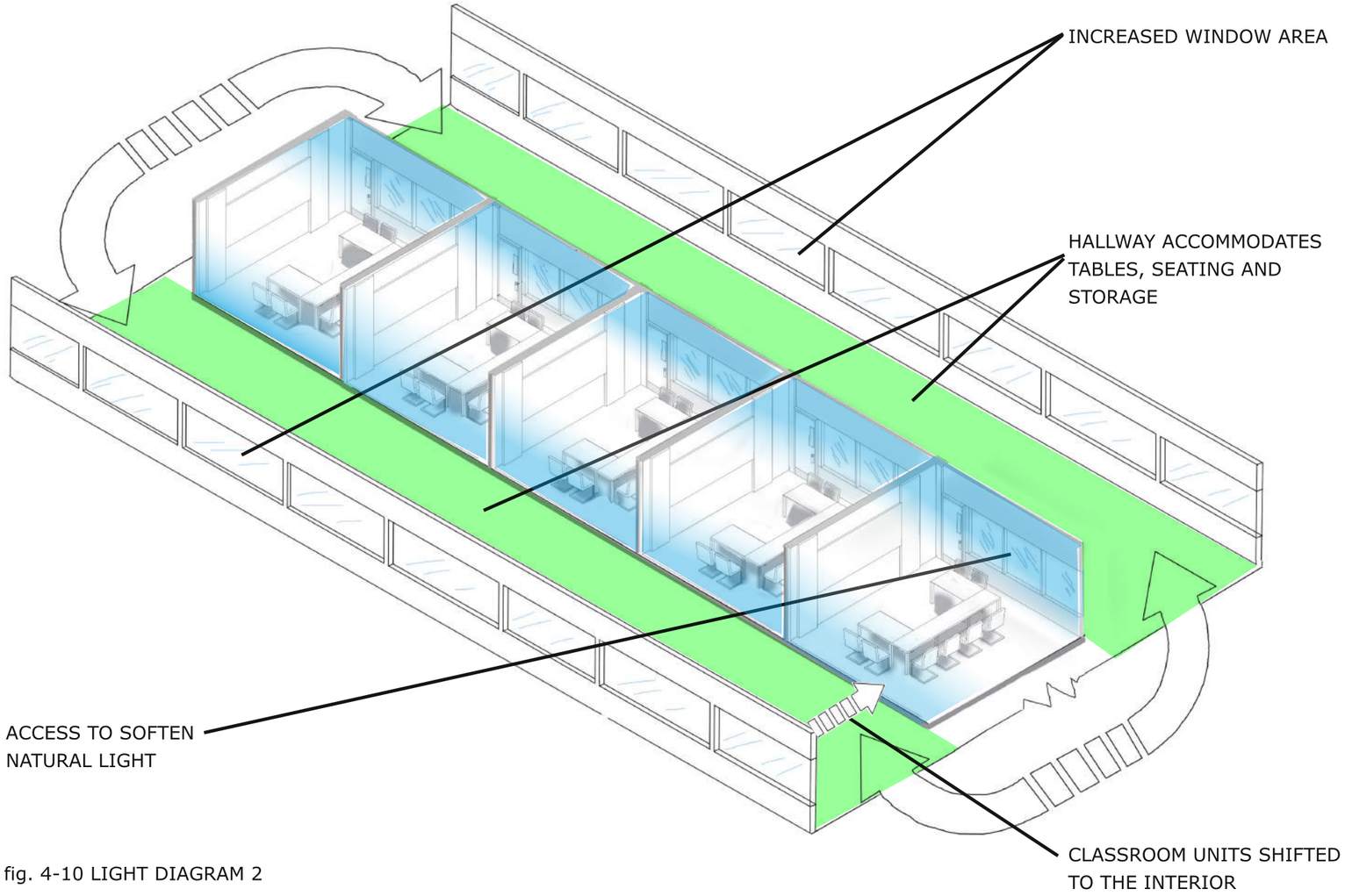
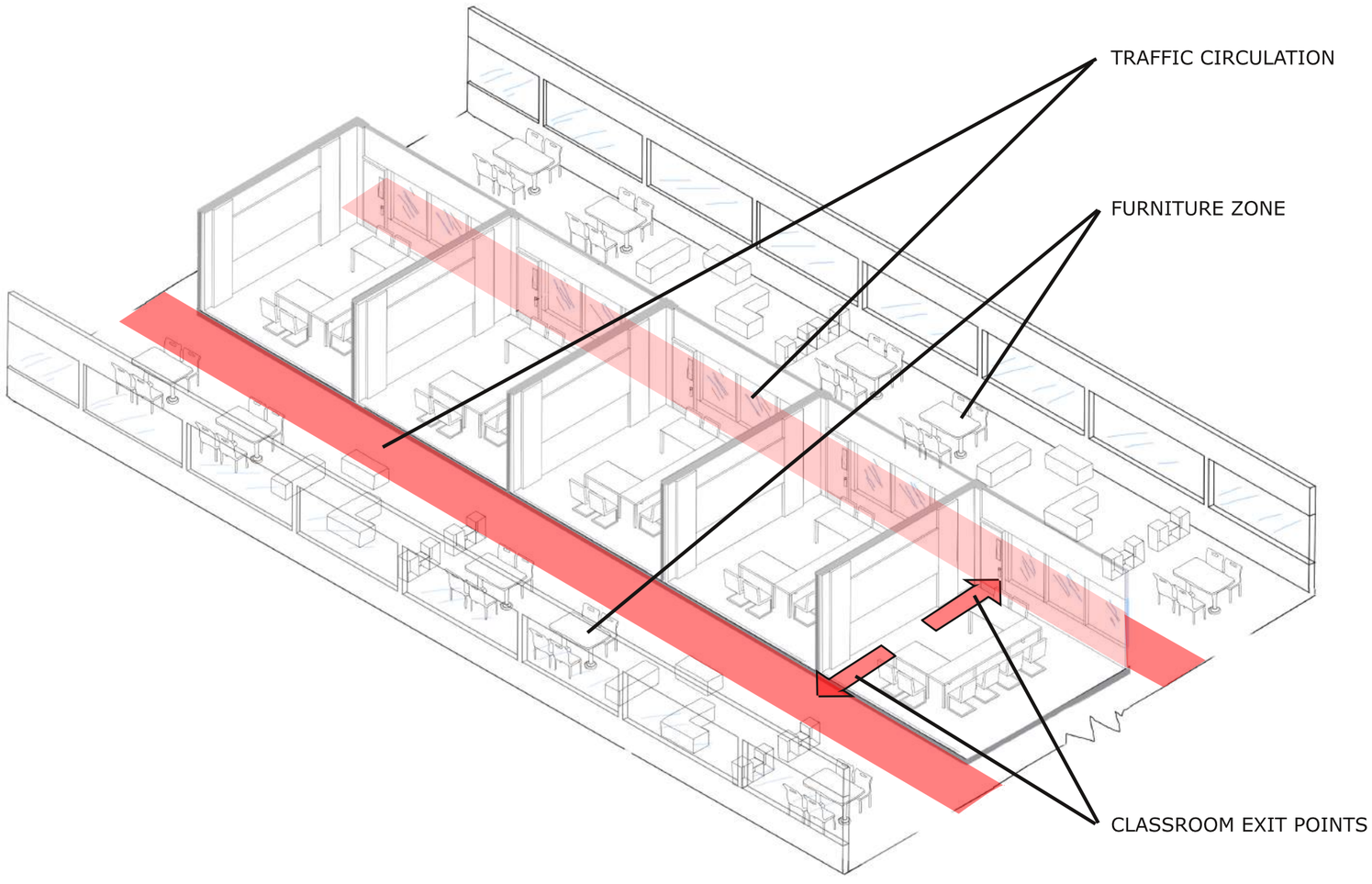


fig. 4-10 LIGHT DIAGRAM 2

PEDESTRIAN TRAVEL PATHS

In **figure 4.11** the traffic route separates the classrooms from the activities that is populated with furniture. This clear route allows for a understanding of where to move and where to stop.



ffig. 4-11 TRAFFIC DIAGRAM

ACOUSTICAL ANALYSIS

The acoustically design of the wider hallway will allow the noise to gradually diffuse with the distance. The furniture also helps to interrupt the path of the sound. The sound proofing of the wall of the classroom reduce the amount of outside disturbances. (**Figure 4.12**)

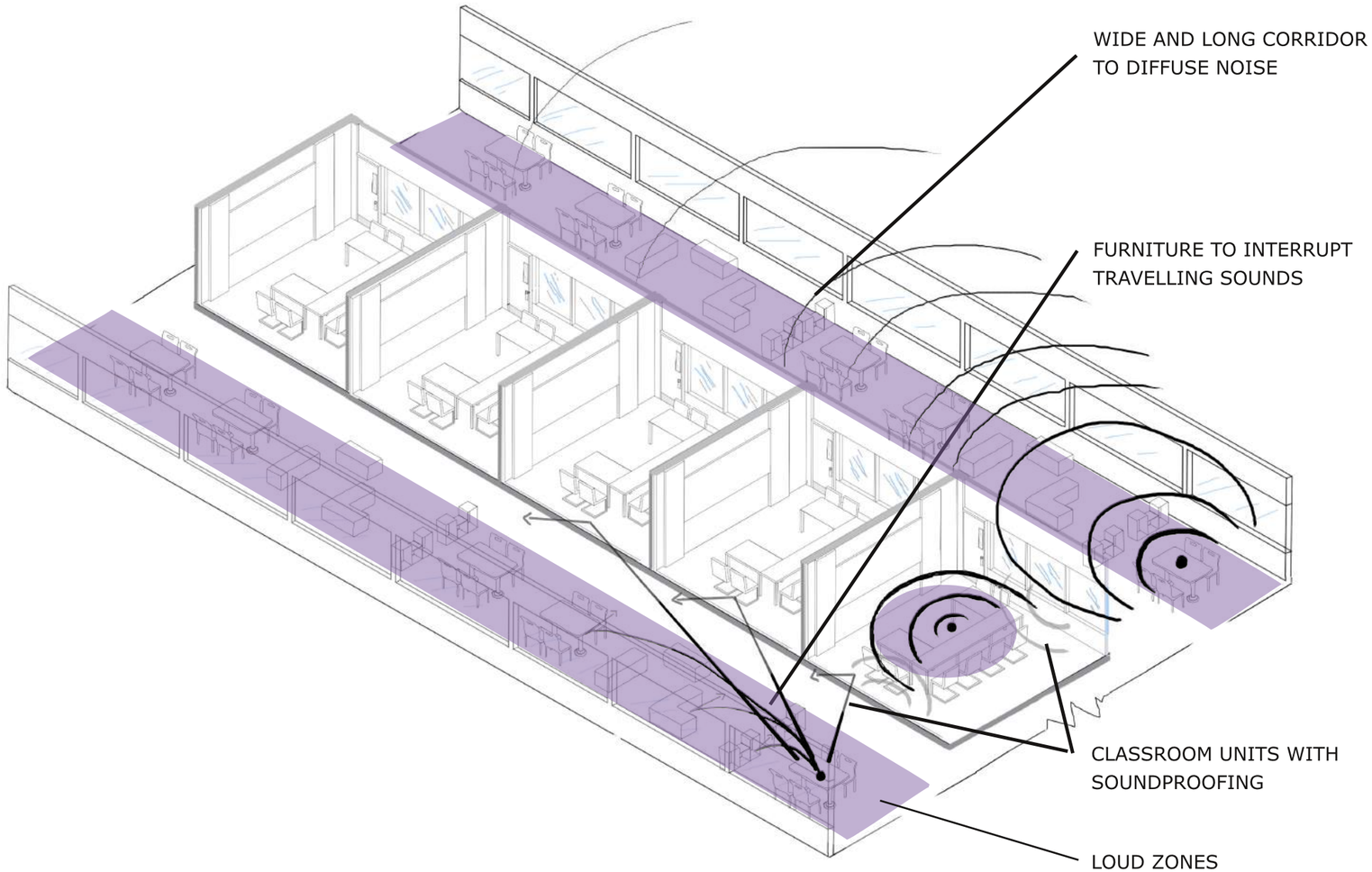
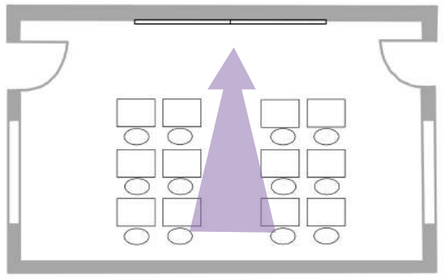


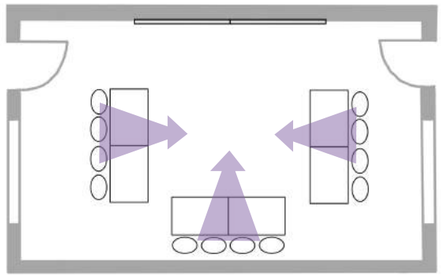
fig. 4-12 NOISE DIAGRAM

4.4 CLARITY AS INFLUENCES BY DISTANCE

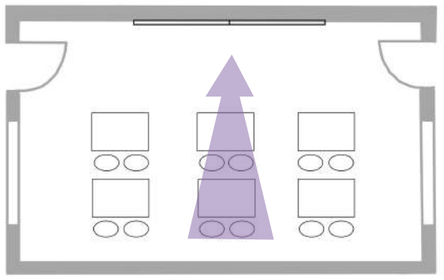
CLASSROOM ARRANGEMENT ANALYSIS



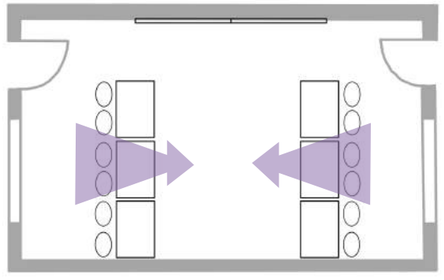
PAIR COLLUMN



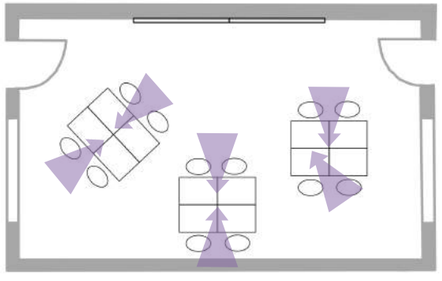
PAIR SQUARE



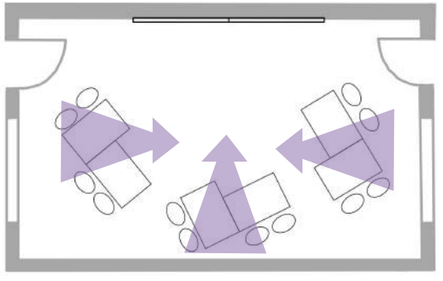
PAIR ROWS



PAIR DEBATE



FOUR GROUP CLUSTERS



V- CLUSTERS

DIRECTION OF ATTENTION

fig. 4-13 EXCLUSIVE FOCUS ARRANGEMENTS

fig. 4-14 INCLUSIVE FOCUS ARRANGEMENTS

The center of attention that a classroom has is determined by the direction that the students are facing. In **figure 4.13** while the center of attention is directed towards the 'front' of the classroom not everyone is aware the whole class. This classroom arrangement student awareness is minimized to one main focus which often results in scattered connection of communication with their peers.

In **figure 4.14** the center of attention is directed in a manner that all of the students are facing each other. This classroom arrangement promotes a group connection and awareness that support whole class discussions and activities.

OPTIMAL CLASSROOM ARRANGEMENT

Shrinking the size of the classroom addresses the sound and visual qualities that is effected by distance. The closer the students are to each other the more they can gather because the classroom is now similar to a conference style meeting space. This arrangement supports discussions and short lecture conditions that is in-line with the authentic learning ideology **(Figure 4-15**).

The main purpose of this space is to provide the framework for the days activity such as when teachers provide guidance in small class discussions or to give instruction for activities and projects. This space is not designed for test, or written classwork activities.

Another idea addressed with the shifting of features and functions out of the classroom is where then would the student be able to display boards and project models or store book and tools. The answer is that the widen circulation zone will now accommodate more then just traffic.

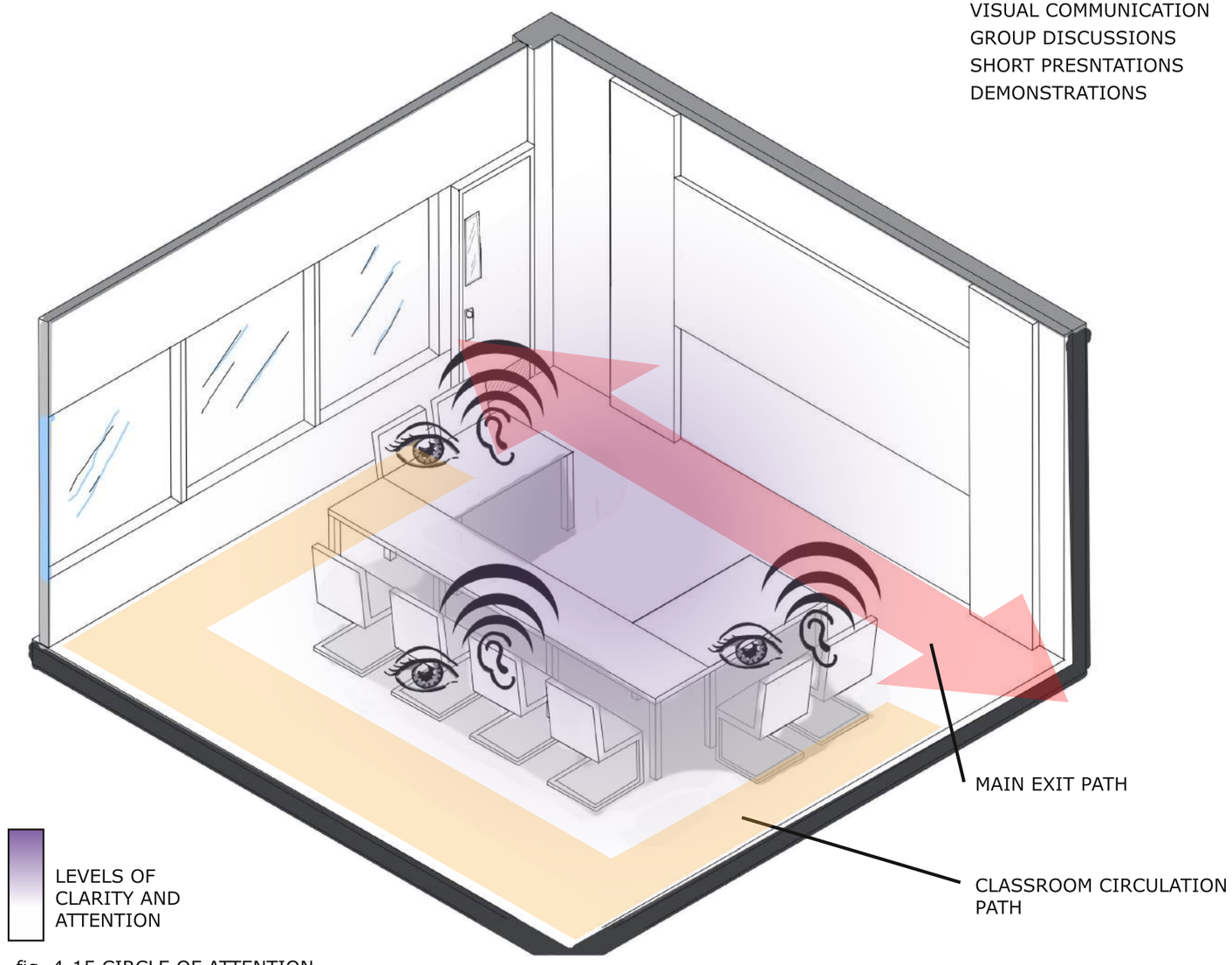


fig. 4-15 CIRCLE OF ATTENTION

4.5 AUTHENTIC LEARNING ENVIRONMENT

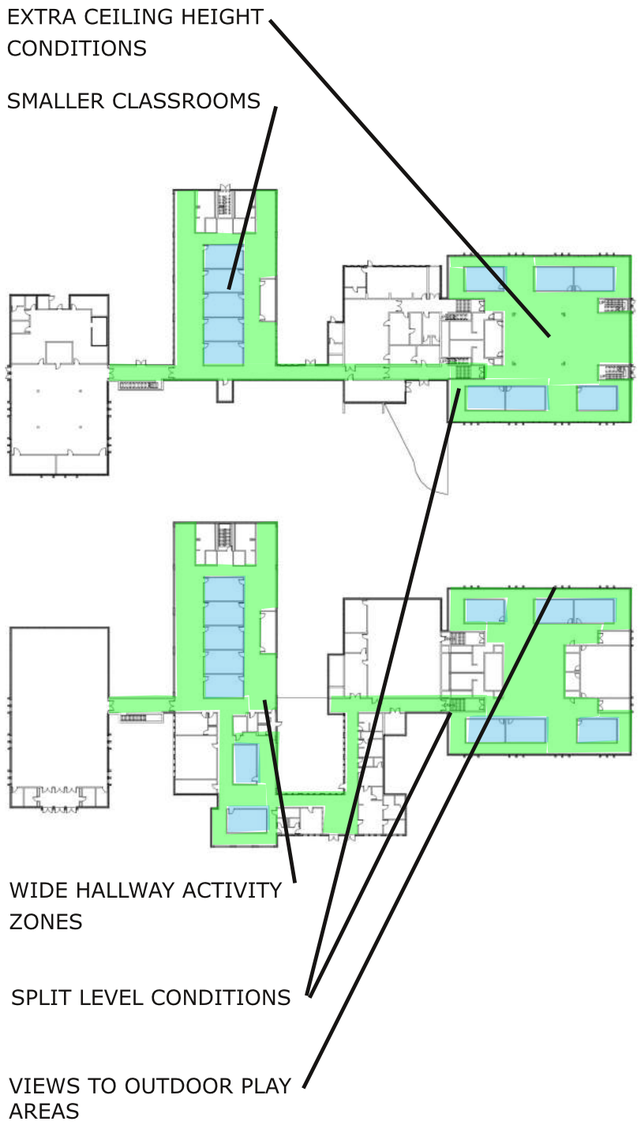


fig. 4-14 PROPOSED FLOOR PLANS

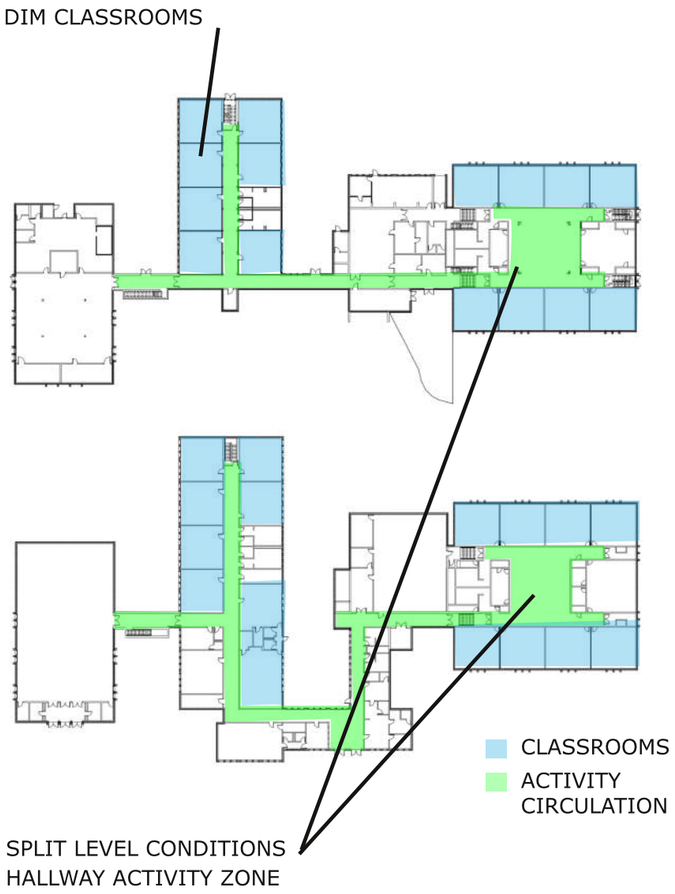


fig. 4-15 CURRENT FLOOR PLAN

fig. 4-12 ACTIVITY BASED CLASSROOM
(http://www.upsd.org/uploaded/News_Posts/SciExp4-crop2.jpg)

The experience of an authentic learning environment is based on real-life projects and activities that incorporate the students and even community members in such a way that the product or outcome is not only tangible but meaningful to everyone who was involved in it's production.

The **figure 4-12** shows students relaxing but the reality is that everyone is always learning. The main idea with school is to provide a safe place to learn the most beneficial skill about life and self.

A learning environment that supports authentic learning has larger activity spaces while still incorporating lecture and study zone embedded within the overall design (**Figure 4-13**). As described throughout this body of research, learning happens effortlessly with experiences. Authentic learning aims to provide the experience and connection that for the most part public school currently is missing or at the best cases is minimized (**Figures 4-14, 4-15**).

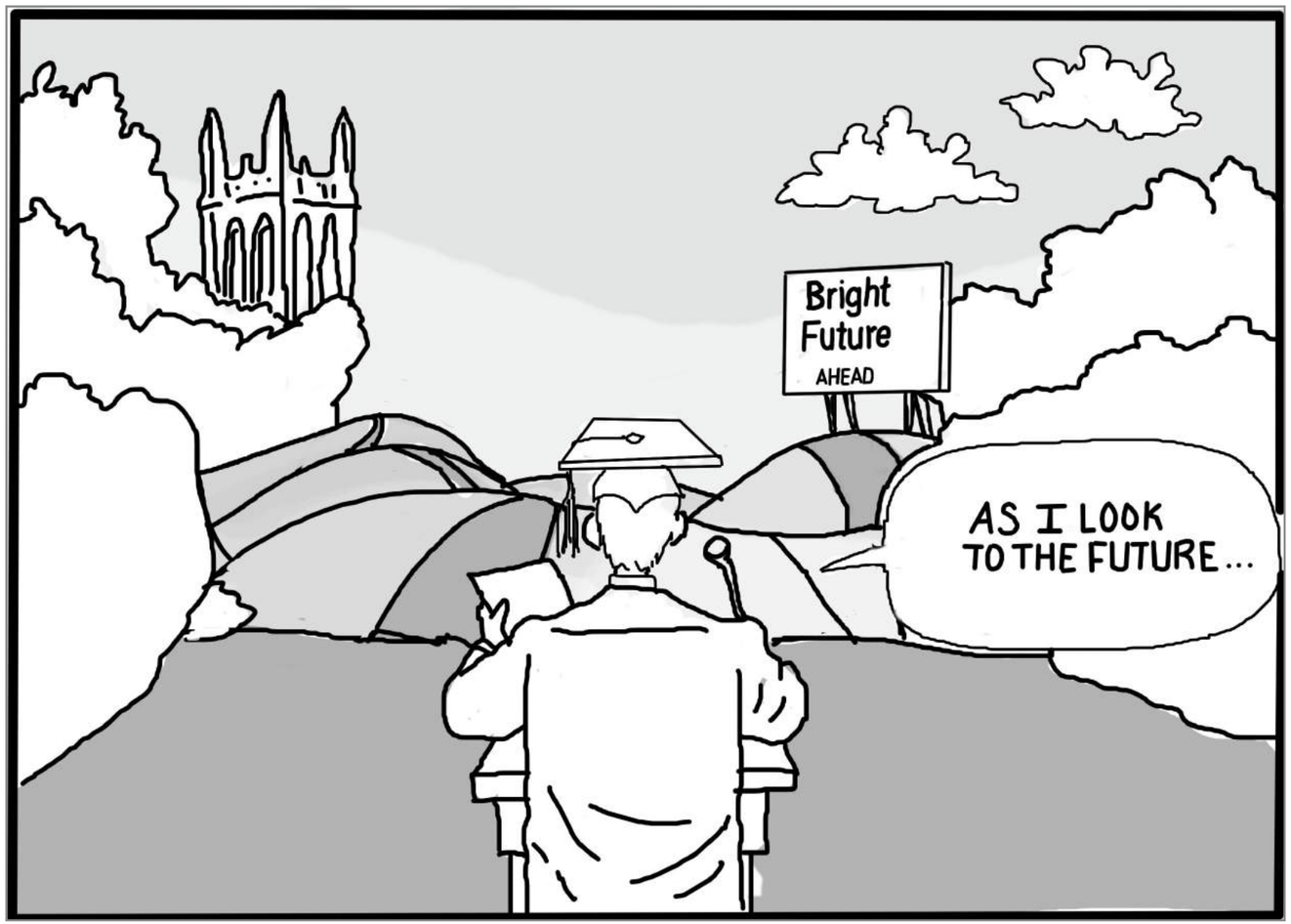
4.6 CHAPTER SUMMARY

The design strategy in segments address individual issues that connect to blend into the overall experience. With all of the segments working together the flow between spaces blur the boundaries and limits the time of activities normally separated.

The resulting building has less classrooms in response to the student routine to work in groups outside of the traditional classroom model. As a response to less classroom instruction time, students will be able to work on projects and activities as a whole school where learning is not restricted or influenced by teachers or curriculum. This also works well with real-life project and creative and critical thinking skills and those experiences.

As a model of spatial requirements the school shifts its attention from classroom arrangement to circulation and connections that blends or blur boundaries.

05 CONCLUSIONS AND RECOMMENDATIONS



PUBLIC SCHOOL END OF A JOURNEY
-DIGITAL MEDIUM

5.1 EXPERIENCE AS A TEACHING TOOL

The experience of going through schooling that allows for authentic learning of topics and issues that are relevant to everyday life pushes students to want to uncover and discover more. The idea behind this design model is to be able to transform the traditional school model into a building that can now adapt to the more varied teaching method. Schools have more then just the teacher or the students side to the conversation which make this space all the more complicated to understand. A lot of children behavioural studies and understanding of the teaching processes goes into the design of a traditional building. However what is currently being expressed by a majority of people in the education system is that there is a disconnect somewhere.

Student are the main focus of the education process but the teachers are now stuck trying to get out of both their students and the new technologies way. The teachers that believed that students could learn anywhere became accustomed to always having to arrange and rearrange the classroom for the students, the teaching methods and the varied activities. As a result, teachers must experiment just as must as the students to find the right combination of work and play in the dim small boxy space.

The take away from this body of research it the output of the design. While most designs are bold and place an exaggerated feature point as almost like a selling feature. This research is not attempting to sell a feature but the concept that the current buildings can be renovated to support a whole new teaching model. The visual is less exaggerated to become the simple moves to reduce cost but still make an impact in the experience of the spaces.

5.2 DESIGN VARIETY

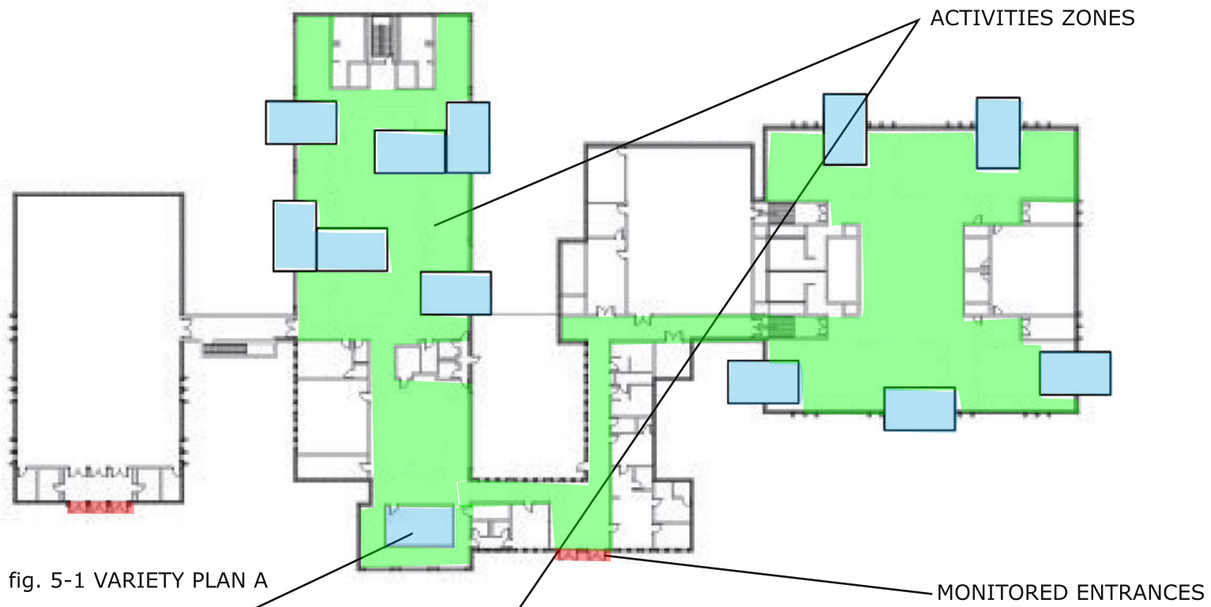


fig. 5-1 VARIETY PLAN A

fig. 5-2 VARIETY PLAN B

In response to the final architectural review comment of the arrangement of the classroom units and the experience as a perspective could be explored. Another idea that was asked about the design related the openness of the different floor levels and the views concerning the difference in height (**Figure 5-2**).

Whether there could be roof access and security issues that the new designed needed to take into consideration. The short response to these query was those would be the next step of investigations.

As explained about the first step of investigations the classroom and the relation to activities and function shifting and the students and teachers experiences are part of the equation of how the ratios will change the flow of the school day (**Figure 5-1**).

5.3 CONCLUSIONS

Addressing the final review comments:

The expressive designs from the precedents are newly designed spaces, not renovation that this project explores. Which does mean that the extreme design moves of glass walls and movable interactive feature while exciting are not the feel that most teacher and administrators find comfortable as en expression of a learning environment.

The misconception that learning however needs to looks like a library denies that learning really can take place in unique places. However after reviewing this body of research the point this school design is trying to make is that school can be to optimal authentic learning environment.

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